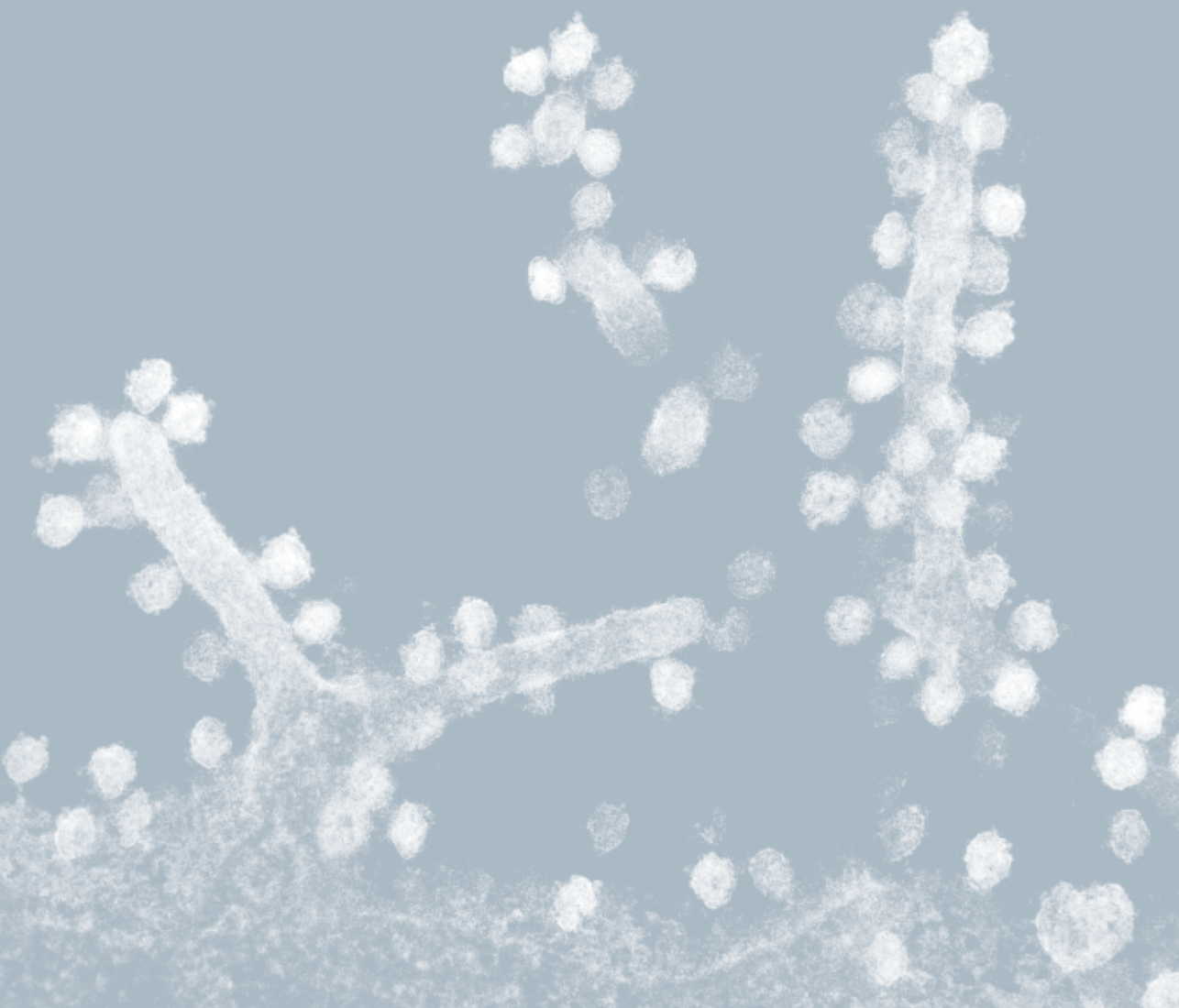


C I P F

CENTRO DE INVESTIGACIÓN PRÍNCIPE FELIPE
2021 _ A N N U A L R E P O R T



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C I P F

CENTRO DE INVESTIGACIÓN PRÍNCIPE FELIPE



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F O R E W O R D B Y

T H E D I R E C T O R

With the arrival of anti-COVID vaccines and the implementation of a highly efficient vaccination campaign by the Valencia Health ministry, the CIPF returned to a normal level of activity in 2021. Nevertheless, we are ever mindful that the pandemic is not entirely over, that infection with new variants of Sars-CoV-2 virus remains a threat for the vulnerable members of our society.

In April, we opened the exposition "Living to be a 100 years old", an interactive, audiovisual project dedicated to the biological, psychological, cultural, and economic aspects of human ageing. As the world confronts the health and economic challenges of an ageing population, there has been dramatically increased interest in the science and social aspects of ageing. We are grateful to the CSIC Foundation for the loan of this very timely exhibit. During the spring and summer, many members of the public visited the exhibit in our center. We closed this event with a multidisciplinary workshop on Healthy Ageing which coincided with the International Day for Older Persons.

The development of more International collaborations is a priority in our strategic plan as these agreements permit us to enhance the visibility of the CIPF in the global scientific community. This year we created our first international joint unit with Dr. Toni Vidal-Puig of the University of Cambridge. Dr. Vidal-Puig is a prestigious investigator in the field of diabetes and obesity and his presence in the CIPF will enrich the research and competitiveness of our center. He currently is principal investigator of the ERC grant STEMBAT.

In summer of 2021, we welcomed two new Ramón y Cajal investigators as junior group leaders. Dr. Juan Rodríguez-Vita comes to us from the German Cancer Research Center. Juan has an extensive background in immunology and metabolism which he now uses to pursue questions in the field of tumor biology. Dr. Vicente Perez Garcia performed his postdoctoral training at the University of Cambridge's Trophoblast Center and will now direct a group dedicated to the cellular and molecular basis of implantation. Dr. Stefania Carobbio, a recipient of the GenT fellowship, joined the CIPF as a junior group leader from the Sanger Institute and brings extensive expertise in adipose biology. Additionally, Dr. Víctor Gómez is the new director our animal facility after spending more than 10 years as head vet in

the clinical hospital of Oslo. We were also very fortunate to recruit Cristina Rajo as head of our new Research Support Unit. Cristina has an excellent track record as a scientific project management and we look forward to working with her to further develop our funding portfolio.

As we welcomed the arrival of new colleagues, we were saddened to say farewell to our long-time collaborator, the eminent pathologist Dr. Jerónimo Forteza who passed away in April. Dr. Forteza inspired many of us not only with his passion for cancer research but also with his determination to remain active and productive despite his struggle with Parkinson's disease. We paid our tribute to the many contributions of Dr. Forteza by placing his name on our large conference room and thus, a part of Jerónimo remains with us for our seminars and events.

Although the confinement and other measures to control COVID in 2020 altered the rhythm of the center in 2020, 2021 was a stellar year for our scientific results. More than 80% of all our publications were in Q1 or higher journals. This is an excellent result for the CIPF and brings us closer to our goal of becoming a Severo Ochoa center. Dr. Rosa Farrás applied successfully to coordinate a COST Action project from the EU program. Dr. Vicky Moreno was awarded a grant from the very prestigious Synergy program of the EU. In addition to our success in these very competitive international calls, 6 of our principal investigators submitted successful applications to the annual call from the Ministry of Science. Finally, congratulations to Dr. María Jesús Vicent who received the Concepción Aleixandre Prize for Women in Science from the local city of Picanya.

Many thanks to all of you for your patience and your strength as we resume our seminars, lab meetings, courses, and other activities that are best done in person. The success of the anti-COVID vaccines has revealed to the public what we already know: with ample funding and sufficient collaboration and support, scientists can solve the most urgent medical problems. More research, better health.

Deborah Burks

B O A R D O F

T R U S T E E S

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Advisor in the Department of Universal and Public Health CSUISP.

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Isabel Fariñas Gómez

Tenured Professor at the Department of Cellular Biology, University of Valencia. Acting in a personal capacity.

María A. Blasco Marhuenda

Director of the Spanish National Cancer Research Center (CNIO).

Carmen Ayuso García

Scientific Director of the Fundación Jiménez Díaz Health Research Institute.

Óscar Marín

Director of the Medical Research Centre for Developmental Neurobiology, Kings College London.

Boluda Corporación Marítima S.L.

President of the Valencian Foundation for Advanced Studies, represented by Vicente Boluda Fos.

Manuel Llombart Bosch

Acting in a personal capacity.

HONORARY MEMBER

Santiago Grisolia García

President of the Valencian Council of Culture (CVC).

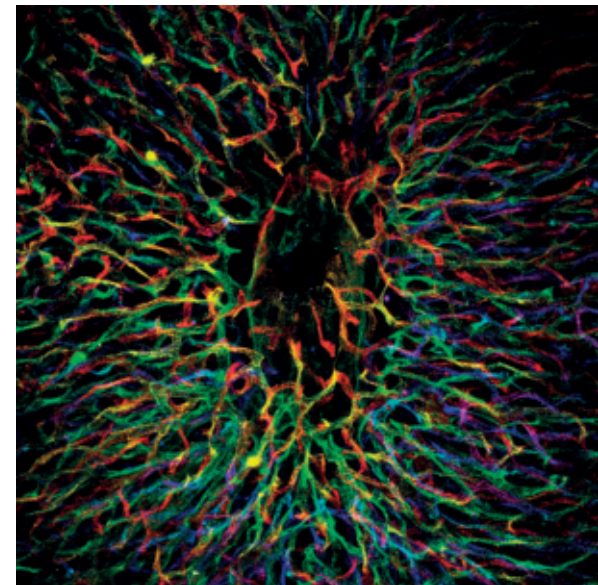
SECRETARY

Deborah J. Burks

Director of the Príncipe Felipe Centro de Investigación (CIPF).

*In the Board meeting celebrated on the 13th of December 2021, Carmelina Pla and Antonio Pellicer were relieved of their position. Mónica Almiñana joins as new member.

S C I E N C E

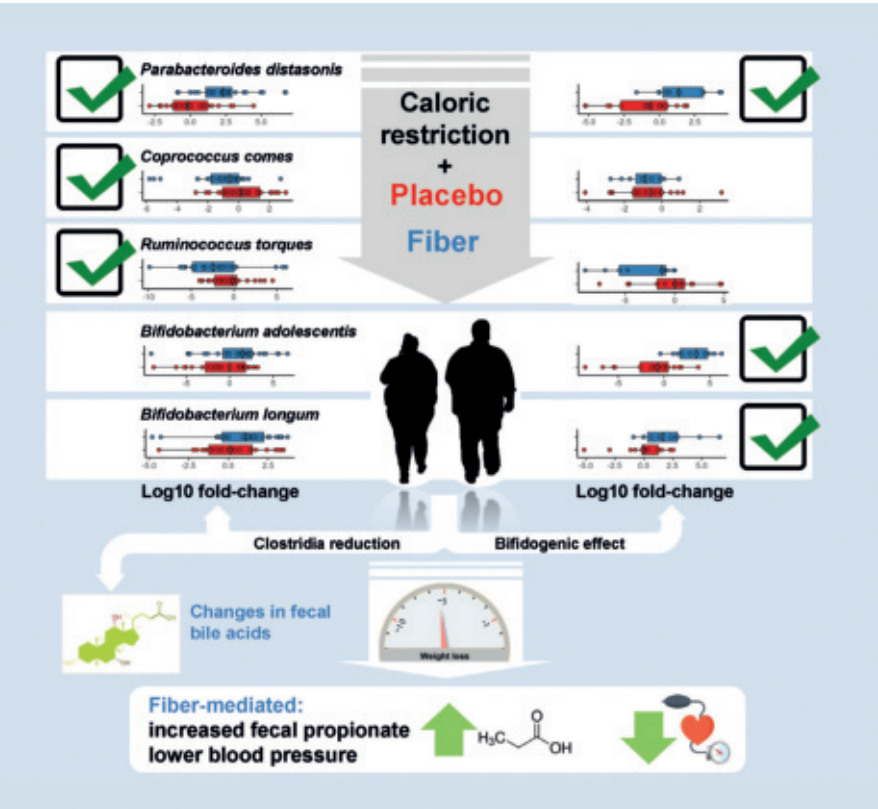


S C I E N C E

HOST-MICROBE INTERACTIONS IN METABOLIC HEALTH

TEAM MEMBERS

Alfonso Benítez-Páez, *Principal investigator*
Sonia Cárdenas Brito, Pedro Sánchez Sánchez, Irene Requena Sánchez,
Miguel Teruel Coll



OVERVIEW

Our investigation based on pre-clinical and clinical approaches to unveil diet-host-microbe interactions underlying metabolic health have permitted us to advance in the understanding of how our microbes modulate our physiology under certain nutritional environments. We are also actively working on developing and formulate innovative synbiotics products using next generation potential probiotics strains in combination with novel plant-origin ingredients. The main group outcomes in 2021 consisted of a relevant clinical assessment to unveil sex-associated response to a caloric restriction regime with fiber supplementation to ameliorate metabolic dysfunction in obese subjects. New clinical studies have started in our laboratory to improve the characterization of microbial communities towards defining composition at species and strain level using cost-effective and cutting-edge sequencing technology.

SELECTED PUBLICATIONS

Benítez-Páez A, Hess AL, Krautbauer S, Liebisch G, Christensen L, Hjorth MF, Larsen TM, Sanz Y. Sex, food, and the gut microbiota: disparate response to caloric restriction diet with fibre supplementation in women and men. *Mol Nutr Food Res* 2021; 65:e202000996. doi: 10.1002/mnfr.202000996. [Quality indicator: Q1 in Food Science & Technology, JCR 2020].

López-Almela I, Romani-Pérez M, Bullich-Vilarrubias C, Benítez-Páez A, Gómez del Pulgar EM, Francés R, Liebisch G, Sanz Y. *Bacteroides uniformis* combined with fiber amplifies metabolic and immune benefits in obese mice. *Gut Microbes* 2021;13:e1865706. doi: 10.1080/19490976.2020.1865706. [D1/Q1 Microbiology, JCR 2020].

Turroni S, Benítez-Páez A. Editorial: Remodeling Composition and Function of Microbiome by Dietary Strategies - Functional Foods Perspective. *Front Nutr* 2021;8:811102. doi: 10.3389/fnut.2021.811102. [Quality indicator: Q1 in Nutrition and Dietetics, JCR 2020].

MOLECULAR
NEUROENDOCRINOLOGY

TEAM MEMBERS

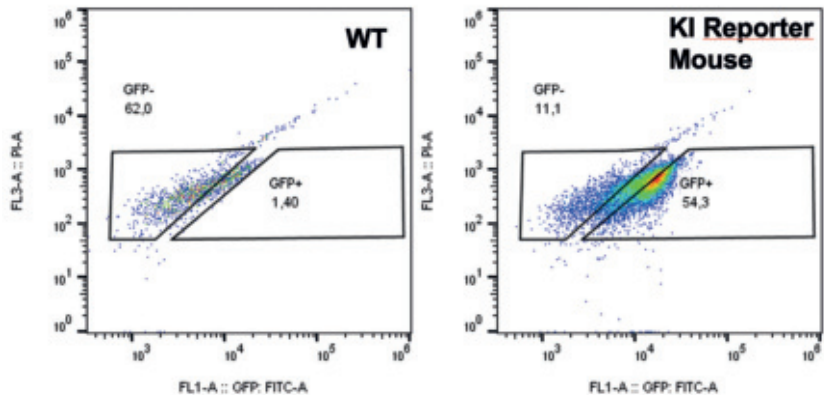
Deborah Burks, *Principal investigator*
M^a Amparo Galán, Arantxa Leal, Carlos Acosta, Esperanza Irlés

OVERVIEW

During 2021, we have continued to pursue our aim of expanding basic knowledge about the role(s) of insulin receptor substrate (IRS) proteins in diabetes and obesity. Understanding the mechanisms that underlie β -cell dysfunction is crucial for designing therapeutic approaches for both type 1 and type 2 diabetes. Development of this strategy for clinical consideration requires a thorough knowledge of the regulatory pathways that govern beta cell development and their survival in adults. Deletion of *Irs2* in mice causes diabetes owing to a reduced beta cell mass and peripheral insulin resistance. IRS2 signals are required for beta cell compensation under conditions of metabolic stress such as high fat feeding. To investigate the role of IRS-2 signaling in pancreatic progenitor cells, we use a multi-disciplinary approach that combines a novel reporter mouse model with in vitro human experimental models. We are using the reporter mouse to define the spatial and temporal expression of IRS2 during stages of embryonic pancreas development and during the normal ageing of adult mice using a new reporter model where GFP and luciferase are driven by the *Irs2* promoter. Completion of these aims will not only improve our understanding of how IRS2 signaling regulates beta cell development and survival but will provide new insights into the etiology of diabetes and may identify new markers for the early diagnosis and treatment of beta cell failure. IRS2 represents a rationale target for protecting existing beta cells in the adult pancreas. The reporter mouse is also an excellent tool for defining the role of IRS2 signals in other insulin-sensitive tissues including liver and adipose tissue.

SELECTED PUBLICATIONS

Immunological response against SARS-CoV-2 following full-dose administration of Comirnaty® COVID-19 vaccine in nursing home residents.
Albert E, Burgos JS, Peiró S, Salas D, Vanaclocha H, Giménez E, Limón R, Alcaraz MJ, Sánchez-Payá J, Díez-Domingo J, Navarro D; Valencian Vaccine Research Programme (ProVaVac) Study Group. Clin Microbiol Infect. 2022 Feb;28(2):279-284. doi: 10.1016/j.cmi.2021.09.031. Epub 2021 Oct 5. PMID: 34619398



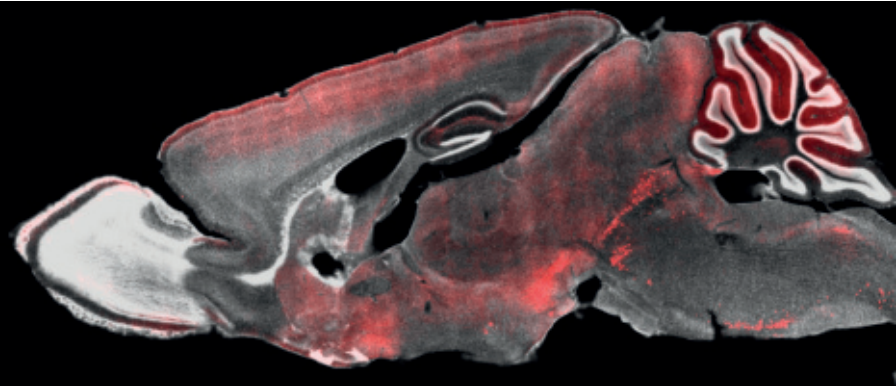
Separation of Islets from
KI-IRS2 Reporter.

NEURAL PLASTICITY LABORATORY

TEAM MEMBERS

Isabel del Pino Pariente, *Principal investigator*
Selene Díaz Chiachio, Álvaro Ballesteros González, Candela Barettino,
Dianosh Falahatgaroshihi, Marina Villaro, Hala Nam, Jaime Díaz

Neural circuits labelled (in red)
expressing serotonin in the mouse brain.



OVERVIEW

Our laboratory is unveiling cellular and molecular mechanisms underlying cognitive function. Using mice as animal models, we recently revealed specific neural circuits expressing serotonin that regulate the formation of social and fear memories (Barettino, Ballesteros-González et al., 2021 *Frontiers in Cell and Developmental Biology*).

In addition, our work contributed to a better understanding of the efficacy of antiepileptic drugs in the treatment of neurodevelopmental disorders characterized by severe cognitive and motor function such as the CDKL5 deficiency disorder (Aledo-Serrano et al., 2021, *Epilepsy behavior*). Thanks to this interdisciplinary work, we have started to unveil molecular targets that will be leveraged during the design of new therapeutic strategies aimed to improve cognitive symptoms in a wide range of neurological and neurodevelopmental disorders of known genetic etiology. Finally, we highlight advances of new diagnostic strategies used in those patients suffering of neurological disorders with uncertain genetic etiology (Aledo-Serrano et al., 2021 *J Trans Genet Genom*).

SELECTED PUBLICATIONS

Barettino C, Ballesteros-Gonzalez Á, Aylón A, Soler-Sanchis X, Ortí L, Díaz S, Reillo I, García-García F, Iborra FJ, Lai C, Dehorter N, Leinekugel X, Flames N, Del Pino I. Developmental Disruption of *ErbB4* in *Pet1*+ Neurons impairs Serotonergic Sub-System Connectivity and Memory Formation. *Front Cell Dev Biol*. 2021 Dec 10;9:770458. doi: 10.3389/fcell.2021.770458. PMID: 34957103; PMCID: PMC8703035.

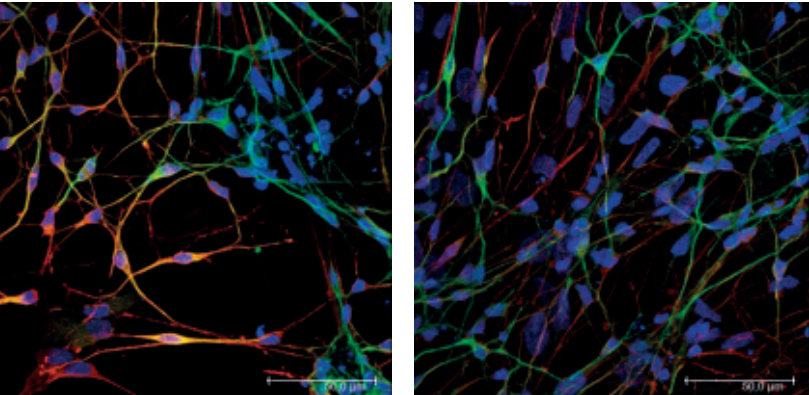
Aledo-Serrano Á, Gómez-Iglesias P, Toledano R, García-Peñas JJ, García-Morales I, Anciones C, Soto-Insuga V, Benke TA, Del Pino I, Gil-Nagel A. Sodium channel blockers for the treatment of epilepsy in CDKL5 deficiency disorder: Findings from a multicenter cohort. *Epilepsy Behav*. 2021 May;118:107946. doi:10.1016/j.yebeh.2021.107946. Epub 2021 Apr 10. PMID: 33848848.

Aledo-Serrano Á, Sánchez-Alcudia R, Toledano R, García-Morales I, Beltrán-Corbellini A, Del Pino I, Gil-Nagel A. Developmental and epileptic encephalopathies after negative or inconclusive genetic testing: what is next? *J Transl Genet Genom* 2021;5:443-55. doi:10.20517/jtgg.2021.40.

STEM CELL THERAPIES IN NEURODEGENERATIVE DISEASES

TEAM MEMBERS

Slaven Erceg, *Principal investigator*
Francisco Javier Rodríguez Jiménez, Francisca Sellés Sorlí,
Juan Ureña Peralta
Alba Maria Arteaga Claramunt, Maria Amparo Perez Aragón



OVERVIEW

Our group develops new therapeutic cell-based treatments for neurodegenerative diseases by using adult stem cells or pluripotent stem cells which include human embryonic stem cells (hESCs) and induced human pluripotent stem cells (hiPSCs). We develop clinically acceptable protocols for neural differentiation and test them in different animal models as potential therapeutic tools to help treat spinal cord injuries and different types of ataxias. We also apply combinatorial approaches using small molecules in order to increase the success of cell-based therapies.

Hereditary retinal dystrophies are another research line in our laboratory. In particular, we are focusing on creating new human cell models using patient-specific hiPSCs, and especially, retinal pigment epithelial (RPE) cells and optic-cup organoids. These can then be used to investigate the mechanisms driving these diseases, develop treatments, perform toxicity screens, and model development in cells affected by these diseases.

Moreover, we intend to correct the gene mutations in these cells using Crispr/Cas9 technology and to optimize the derivation of RPE and photoreceptors from corrected hiPSCs as a cell source for transplantation therapies in animal models with retinal degeneration diseases. In collaboration with other laboratories, we are developing new tools for maintaining high cell viability while delivering RPE and photoreceptor cells into degenerated retina in small and large animal models.

SELECTED PUBLICATIONS

Unraveling the Developmental Roadmap toward Human Brown Adipose Tissue. Carobbio S, Guenantin AC, Bahri M, Rodríguez-Fdez S, Honig F, Kamzolas I, Samuelson I, Long K, Awad S, Lukovic D, Erceg S, Bassett A, Mendjan S, Vallier L, Rosen BS, Chiarugi D, Vidal-Puig A. Stem Cell Reports. 2021 Apr 13;16(4):1010. doi: 10.1016/j.stemcr.2021.03.009.

Gene Correction Recovers Phagocytosis in Retinal Pigment Epithelium Derived from Retinitis Pigmentosa-Human-Induced Pluripotent Stem Cells. Artero-Castro A, Long K, Bassett A, Ávila-Fernandez A, Cortón M, Vidal-Puig A, Jendelova P, Rodríguez-Jimenez FJ, Clemente E, Ayuso C, Erceg S. Int J Mol Sci. 2021 Feb 20;22(4):2092. doi: 10.3390/ijms22042092.

Activation of Neurogenesis in Multipotent Stem Cells Cultured In Vitro and in the Spinal Cord Tissue After Severe Injury by Inhibition of Glycogen Synthase Kinase-3. Rodríguez-Jimenez FJ, Vilches A, Perez-Arago MA, Clemente E, Roman R, Leal J, Castro AA, Fustero S, Moreno-Manzano V, Jendelova P, Stojkovic M, Erceg S. Neurotherapeutics. 2021 Jan;18(1):515-533. doi: 10.1007/s13311-020-00928-0. Epub 2020 Sep 30. PMID: 33000422 Free PMC article.

RARE NEURODEGENERATIVE DISEASES

TEAM MEMBERS

Carmen Espinós, *Principal investigator*
Dolores Martínez-Rubio, Isabel Hinarejos, Candela Machuca,
Ana Sánchez-Monteagudo, Amparo Andrés, Vincenzo Lupo

OVERVIEW

We investigate rare neurodegenerative diseases, specifically, movement disorders (dystonia, parkinsonism, tremor), ataxia, Wilson's disease, and childhood epilepsy. The studies focus mainly on two objectives: (1) establish the molecular basis and the disease mechanisms of this group of rare disorders; and (2) characterize useful diagnostic/prognostic biomarkers for orphan drug monitoring. We generated a cerebellum Purkinje cell (CPC) model for the study of an ultra-rare condition, PLAN (PLA2G6-associated neurodegeneration).

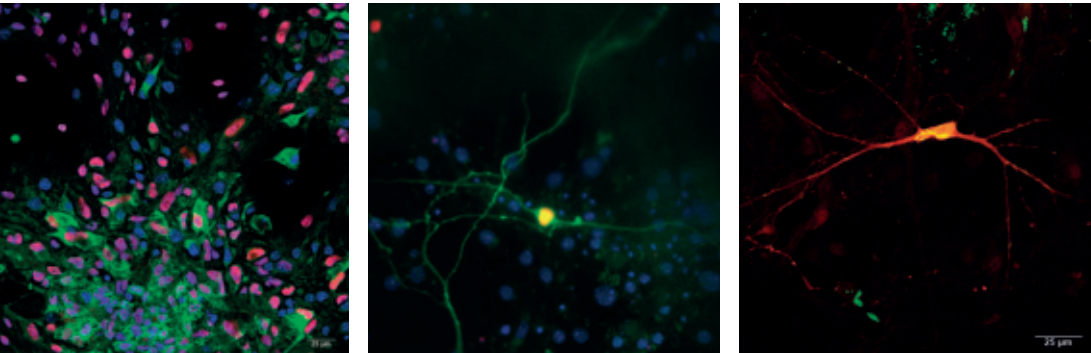
After its characterization, we demonstrated that the CPC-PLAN model shows impairment in mitochondrial dynamics, lipid peroxidation and ferroptosis, as the PLAN patients. We investigated four cohorts of patients with different types of infantile epilepsy (focal, structural, generalized and encephalopathy) in order to determine the microRNA signature of each of these epilepsies. The preliminary findings revealed that the analysis of five miRNAs in plasma allowed us to obtain a differential signature between the epilepsy groups studied.

SELECTED PUBLICATIONS

Sancho P, Andrés-Bordería A, Gorriá-Redondo N, Llano K, Martínez-Rubio D, Yoldi-Petri ME, Blumkin L, Rodríguez de la Fuente P, Gil-Ortiz F, Fernández-Murga L, Sánchez-Monteagudo A, Lupo V, Pérez-Dueñas B, Espinós C*, Aguilera-Albesa S. Expanding the β -III spectrin-associated phenotypes toward non-progressive congenital ataxias with neurodegeneration. *International Journal of Molecular Sciences* 2021; 22: 2505.

Sánchez-Monteagudo A, Ripollés E, Berenguer M, Espinós C*. Wilson's disease: Facing the challenge of diagnosing a rare disease. *Biomedicines* 2021, 9, 1097.

García-Villarreal L, Hernández-Ortega A, Sánchez-Monteagudo A, Peña-Quintana L, Ramírez-Lorenzo T, Riaño M, Moreno-Pérez R, Monescillo A, González-Santana D, Quiñones I, Sánchez-Villegas, Olmo-Quintana V, Garay-Sánchez P, Espinós C, González MJ, Tugores A. Wilson disease: Revision of diagnostic criteria in a clinical series with great genetic homogeneity. *Journal of Gastroenterology* 2021; 56: 78-89

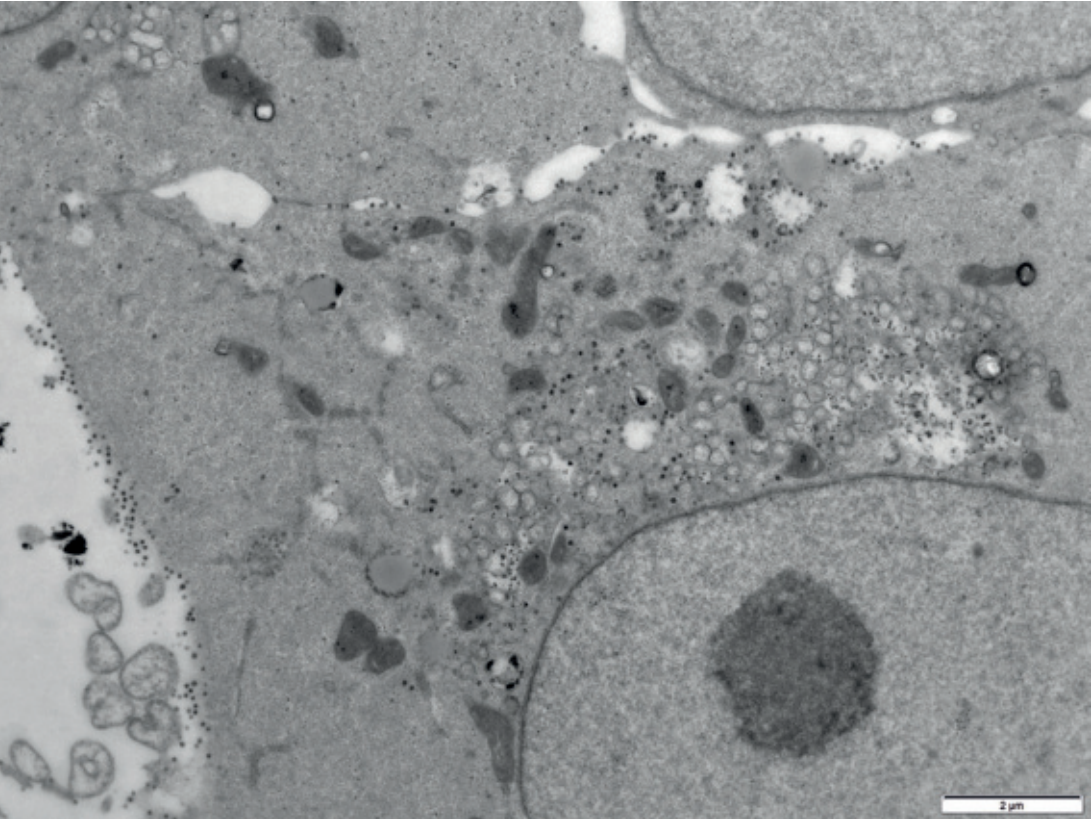


CELLULAR AND
MOLECULAR
IMMUNOLOGY
LABORATORY

TEAM MEMBERS

Enric Esplugues, *Principal investigator*
Salvador Meseguer, Mari Paz Rubio

Cells in culture infected with SARS CoV-2 virus.
Viral particles are observed on the surface and
in the cytoplasm of the cells.



OVERVIEW

Rev-erb α , a repressor of mitochondrial function in Melanoma cells. Rev-erb α is a nuclear receptor and component of the endogenous circadian clock that timely coordinates the circadian metabolic response. Rev-erb- α modulates mitochondria function in muscle by interfering with Ampk-Sirt1-Ppargc1- α signaling. However, the direct role of Rev-erb α in mitochondria has not yet been explored. We have found that Rev-erb- α is within mitochondria from Melanoma cells and acts as a repressor of mitochondrial function. Moreover, Rev-erb- α influences the migratory and invasion capacities of these tumor cells.

Small viral non-coding RNAs in COVID19. We studied the role of two SARS-cov2-encoding small RNAs in down-regulating the expression of a host restriction factor with multiple antiviral activities, SERINC5. The anti-correlative expression between these two svRNAs and SERINC5 was found in different biological samples, including patient samples from COVID19 patients. Silencing of these svRNAs with anti-sense oligonucleotides recovers SERINC5, alters viral gene expression and reduces the expression of certain cytokines.

SELECTED PUBLICATIONS

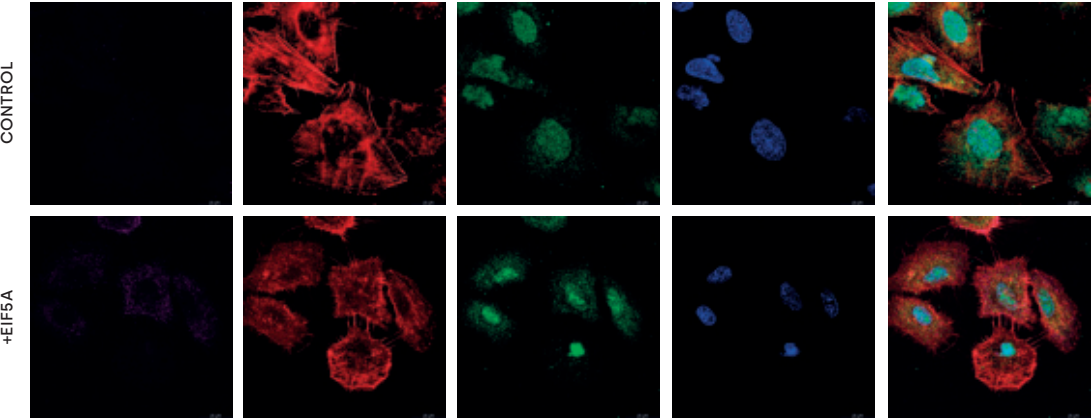
Meseguer S. MicroRNAs and tRNA-Derived Small Fragments: Key Messengers in Nuclear-Mitochondrial Communication. Front Mol Biosci. 2021 May 7;8:643575. doi: 10.3389/fmolb.2021.643575. PMID: 34026824; PMCID: PMC8138316.

ONCOGENIC SIGNALING LABORATORY

TEAM MEMBERS

Rosa Farràs Rivera, *Principal investigator*
Carolina Gandía Ventura, Arantxa Martínez Férriz, Alihamze
Fathinajabadi Nasresfahani, Laetitia Poidevin

elF5A2 induces an increase in F-actin filaments and filopodia formation. Fluorescence microscopy images of the lung adenocarcinoma cell line A549. A549 cells transfected with pCDNA3 (control) or with elF5A2 (+elF5A) were stained with CD44 (purple), phalloidine rhodamine (red), elF5A2 (green) and DAPI (blue) and were observed under a confocal microscope.



OVERVIEW

Despite great advances, lung cancer remains the leading cause of cancer-related death in developed countries. Metastasis and drug resistance are the main factors contributing to relapse and death. The developmental program known as mesenchymal epithelial transition (EMT), has become a possible candidate mechanism to explain tumor metastasis. TGF-beta signalling has been shown to play an important role in EMT.

Our research focuses on studying the changes induced by the TGF-beta signalling pathway at two different levels. First, at the transcriptional level through the activity of AP-1 transcription factors. Dysregulation of AP-1 can promote cell invasion and metastatization, contribute to angiogenesis or stimulate inflammatory responses facilitating cancer development. Second, we also study alterations at the translational level through the activity of elF5A translation factor which promotes EMT in non-small cell lung cancer. Understanding the EMT process will help define new treatment strategies to counteract tumor progression and drug resistance.

To investigate lung tumour biology, we generate in vivo cancer experimental models that can adequately represent tumour heterogeneity and predict drug sensitivity in vivo. Through our expertise in protein degradation our group coordinate the COST ProteoCure Action dedicated to the study of protein homeostasis in health and disease.

SELECTED PUBLICATIONS

Martínez-Férriz A, Ferrando A, Fathinajabadi A, Farràs R. Ubiquitin-mediated mechanisms of translational control. *Semin Cell Dev Biol.* 2021 Dec 21;S1084-9521(21)00317-7.

Pardo-Sánchez JM, Mancheño N, Cerón J, Jordá C, Ansotegui E, Juan Ó, Palanca S, Cremades A, Gandía C, Farràs R. Increased Tumor Growth Rate and Mesenchymal Properties of NSCLC-Patient-Derived Xenograft Models during Serial Transplantation. *Cancers (Basel).* 2021 Jun 14;13(12):2980.

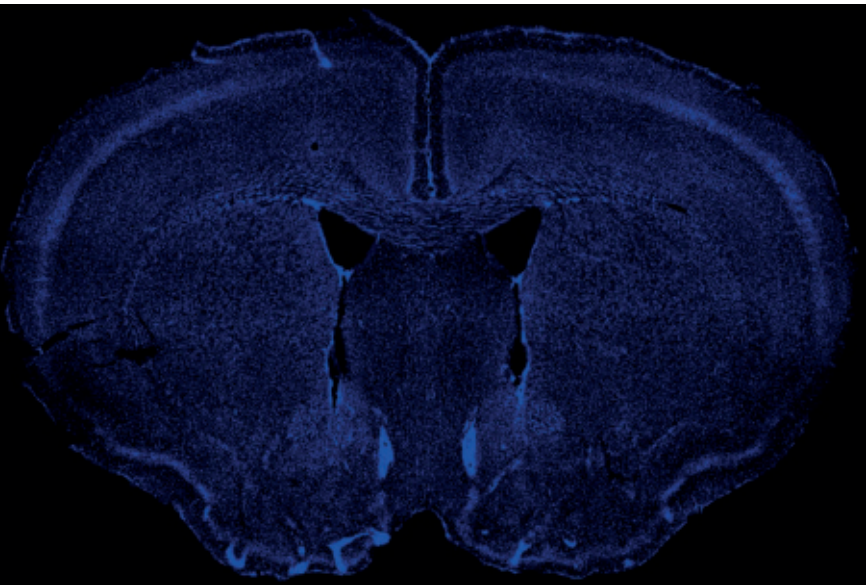
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SCIENCE

CORTICAL
CIRCUITS IN
HEALTH AND
DISEASE

TEAM MEMBERS

Pietro Fazzari, *Principal investigator*
Tomas Armentereros Barron, M^a Carmen Navarro González,
Ángela Rodríguez Prieto, Ana González Manteiga, Yaiza
Dominguez Canterla



Interhemispheric Cortical
Connections.

OVERVIEW

Our group studies the development of the cerebral cortex and investigates innovative strategies to promote the regeneration of cortical neurons upon brain injury.

We found that Nrg1 intracellular signaling regulates neuronal development and that the Nrg1 intracellular signaling is neuroprotective upon stroke both in vitro and in vivo. In addition, we developed a new model of Nrg1 haploinsufficiency to mimic the alteration in Nrg1 expression found in human Schizophrenic patients.

Our multidisciplinary study revealed that relatively subtle decrease in Nrg1 expression may results in significant deficits in the inhibitory circuits. These deficits provoke a decrease in GABAergic transmission and in the distribution of specific subtypes of cortical interneurons (Navarro-Gonzalez et al.; 2021). Overall, this study provides new insights into the molecular basis of Schizophrenia.

Besides, we developed a new methodology to investigate the role of different genes in neuroprotection and development in vitro. This powerful tool will be important for translational research in neurons (Rodríguez-Prieto et al.; 2021).

SELECTED PUBLICATIONS

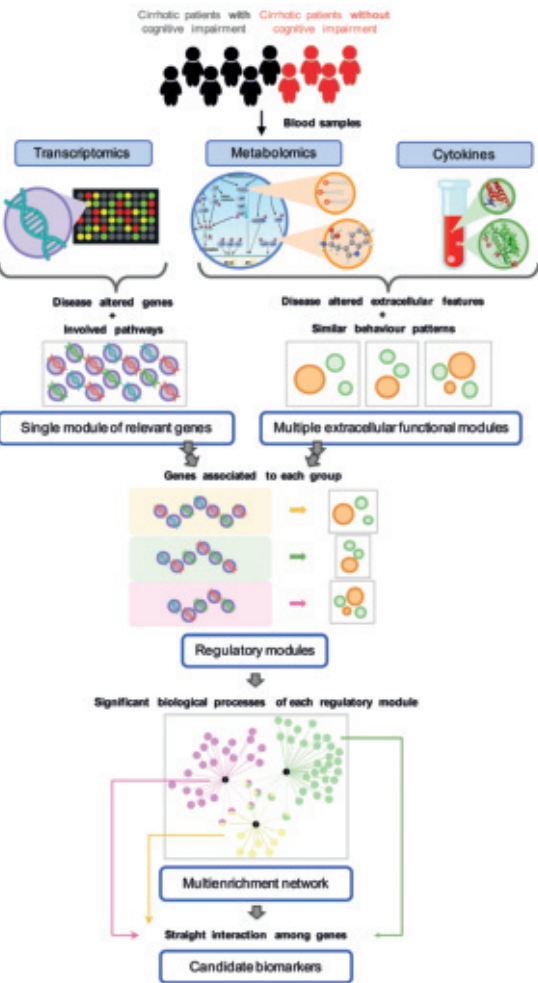
A Scalable Method to Study Neuronal Survival in Primary Neuronal Culture with Single-cell and Real-Time Resolution. Rodríguez-Prieto Á, González-Manteiga A, Domínguez-Canterla Y, Navarro-González C, Fazzari P. J Vis Exp. 2021 Jul 26;(173). doi: 10.3791/62759. PMID: 34369923. Impact Factor 1.4

Nrg1 haploinsufficiency alters inhibitory cortical circuits. Navarro-Gonzalez C, Carceller H, Benito Vicente M, Serra I, Navarrete M, Domínguez-Canterla Y, Rodríguez-Prieto Á, González-Manteiga A, Fazzari P. Neurobiol Dis. 2021 Sep;157:105442. doi: 10.1016/j.nbd.2021.105442. Epub 2021 Jul 8. PMID: 34246770. Impact factor 5.9. Q1

NEUROBIOLOGY LABORATORY, NEUROCIPIF

TEAM MEMBERS

Vicente Felipo, *Principal investigator*
Marta Llansola, Amparo Urios, Carla Giménez Garzó, María Sancho, Paula Izquierdo, Yaiza Arenas, Gergana Ivaylova, Teresa Rubio, Iván Atienza, Mar Martínez, Mari Carmen Castro, Anna Rosselló, Zulema Rodríguez Hernández



OVERVIEW

The Neurobiology Laboratory performs basic and translational research on the mechanisms, diagnostic and treatment of cognitive and motor impairment in animal models of hyperammonemia and minimal hepatic encephalopathy (MHE). We study in rats the mechanisms responsible for cognitive and motor impairment in MHE patients. We analyze the role of peripheral inflammation, how it induces neuroinflammation, how neuroinflammation alters neurotransmission and how this leads to cognitive and motor impairment. Once we identify the mechanisms involved, we design and test new therapeutic treatments to reverse neuroinflammation and restore neurotransmission and cognitive and motor function.

In the Joint Unit with INCLIVA on Neurological Impairment we perform studies in cirrhotic patients with MHE to analyze the cognitive and motor alterations, the cerebral alterations (by magnetic resonance, neurophysiology and neuropathology) and the role of changes in the immune system in triggering these alterations. We look for new, early and more sensitive procedures to diagnose MHE.

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Marta R. Hidalgo García, Rubén Sánchez García, Sandra Alandes Esteve, José F. Catalá Senent, Rubén Grillo Risco, Pablo M. Malmierca Merlo, Sergio Romera Giner, Adolfo López Cerdán, Irene Pérez Díez, Irene Soler Sáez, Carla Perpiñá Clérigues

The Bioinformatics and Biostatistics Unit aims to develop innovative methods and tools for integrative data analysis from different sources in Biomedicine, which allow us a better characterization of human diseases and their treatments. The main lines of work are focused on 1) the generation of clinical predictors based on high throughput technologies and artificial intelligence methods, 2) the detection and understanding of the molecular mechanisms associated with spinal cord injuries, and 3) the study of gender and sex differences in biomedical studies using computational approaches based on omic data meta-analysis, that allow the detection and characterization of the specific molecular mechanisms of male and female in several disease groups: (i) cardiovascular diseases (aortic stenosis and ischemic heart disease), (ii) neurodegenerative diseases (Parkinson's, Alzheimer's and multiple sclerosis), (iii) autoimmune diseases (rheumatoid arthritis, dermatitis, psoriasis), (iv) liver diseases, (v) metabolic diseases and (vi) different tumor groups (ovarian, breast, lung, pancreatic cancer).

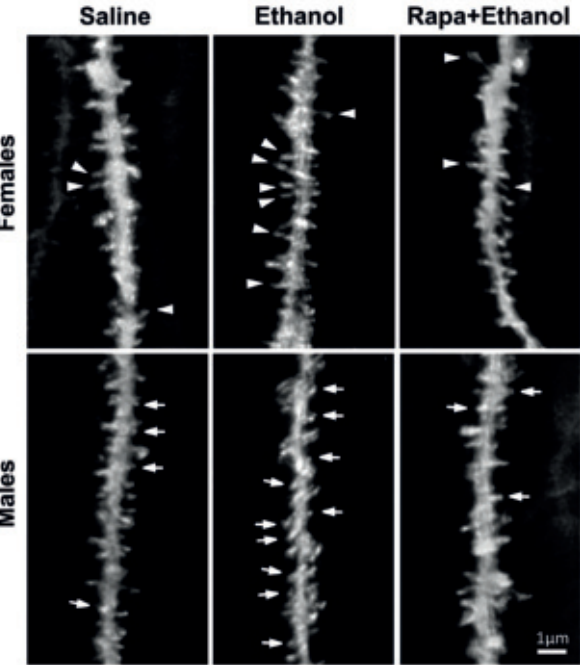
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MOLECULAR AND CELLULAR PATHOLOGY OF ALCOHOL

TEAM MEMBERS

Consuelo Guerri Sirera, *Principal investigator*
María Pascual Mora, Juan Ureña Peralta, Francesc Ibañez Cabanes, Carlos Manuel Cuesta Díaz, Marina Sanchez Petidier, Susana Mellado



Rapamycin restores ethanol-induced alterations in the spine morphology of the dentate gyrus of granule cells in the hippocampus of adolescent female and male mice treated with ethanol.

OVERVIEW

Adolescence is a brain maturation developmental period during which remodeling and changes in synaptic plasticity and neural connectivity take place in some brain regions. Changes in synaptic plasticity and its regulation by mTOR have been suggested to play a role in the behavioral dysfunction of binge ethanol drinking in adolescence. Using adolescent female and male mice (PND30) treated intermittently to ethanol, we show that binge ethanol treatment alters the density and morphology of dendritic spines, effects that are associated with learning and memory impairments along with changes in the CREB phosphorylation and miRNAs. Inhibition of mTOR by rapamycin administration, restores ethanol-induced changes in both plasticity and behavior dysfunctions in adolescent mice. These results support the role of mTOR/autophagy in the dendritic spines alterations and cognitive dysfunction asociated with binge drinking (see Fig).

In an adult mice model of chronic alcohol intake we have also demostrated that administration on of a polypeptide-based nanoconjugate of a curcuminoid (StClPr-BDMC-ANG) capable to pass the blood-brain-barrier, downregulated microRNAs that negatively modulate inflammation ameliorating alcohol-induced neuroinflammation and brain damage

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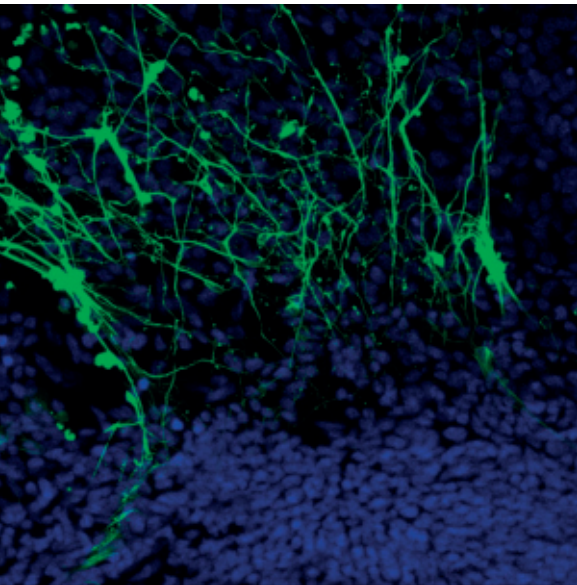
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RETINAL DEGENERATION LABORATORY

TEAM MEMBERS

Dunja Lukovic, *Principal investigator*
Noelia Pimentel Mayordomo, Ana Flores Chova, Raquel Bayona



Immunostaining of iPSC-derived neurons with TUJ1.

OVERVIEW

The vision is the most important sense in humans since the majority of information of our environment is obtained through sight. Therefore, the loss of vision results in the most debilitating sensorial disorders. Approximately 25 % of vision loss is due to retinal dystrophies. The retina is light sensitive tissue that converts light into electrical signals that are sent to the brain for further processing. Retinal dystrophies are progressive disorders that end up with blindness and currently have no cure.

Our aim is to understand retinal function during development and in homeostasis and disease. Using state-of-the-art in vitro techniques, we aim to design new and more effective strategies for therapeutic intervention. Our efforts are focused on the following aims:

1. Understand the hereditary retinal degeneration by developing patient specific retinal models
2. Develop therapeutic strategies based on human pluripotent stem cells
3. Decipher the molecular mechanism of retinogenesis, especially photoreceptor specification via pluripotent stem cells directed differentiation

SELECTED PUBLICATIONS

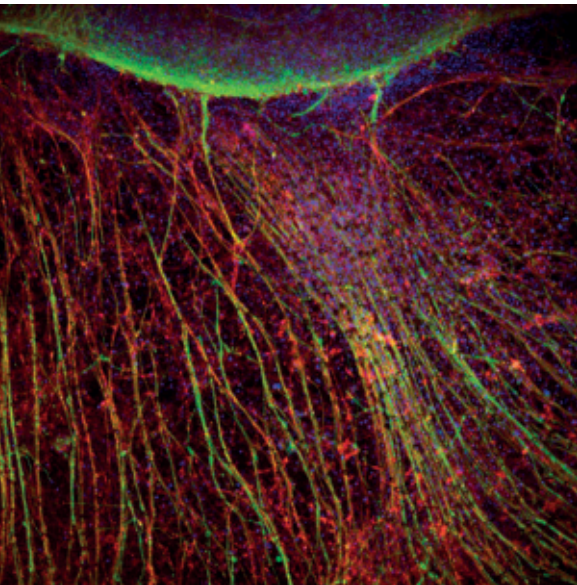
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NEURONAL AND TISSUE REGENERATION LABORATORY

TEAM MEMBERS

Victoria Moreno Manzano, *Principal investigator*
Esther Giraldo Reboloso, Ana Alastrue Agudo, Marina Sánchez Petidier, Pablo Bonilla Villamil, Beatriz Martínez Rojas, Sonia Hingorani Jai Prakash, M^a del Mar Sánchez Martín, Neus Torres Hernández, Maravillas López Mellado, Eric López Mocholi



OVERVIEW

In the Neuronal and Tissue Regeneration laboratory we aim to tackle currently incurable spinal cord injuries (SCI) by the implementation of novel combinatorial strategies that harnesses multiple independent mechanisms involving the use of biomaterials, cells transplantation, pharmacological treatments or genetic modifications for optimal functional regeneration. Among those, last year, we described a new rationally-designed bioresponsive polymer-fasudil conjugate, with enhanced Rho/ROCK inhibitory activity (PGA-SS-F) capable to induce neurite elongation and axon growth in vitro. The intrathecal administration of PGA-SS-F after SCI prevented early apoptosis and induced the expression of axonal growth- and neuroplasticity-associated markers to a higher extent than the free form of fasudil. Moreover, the combination treatment comprising the acute transplantation of NPCs pre-treated with PGA-SS-F leads to enhanced cell engraftment and reduced cyst formation with neuroprotective effects after SCI (Figure 1) (Giraldo et al, Biomaterials. 2021 Sep; 276:121052).

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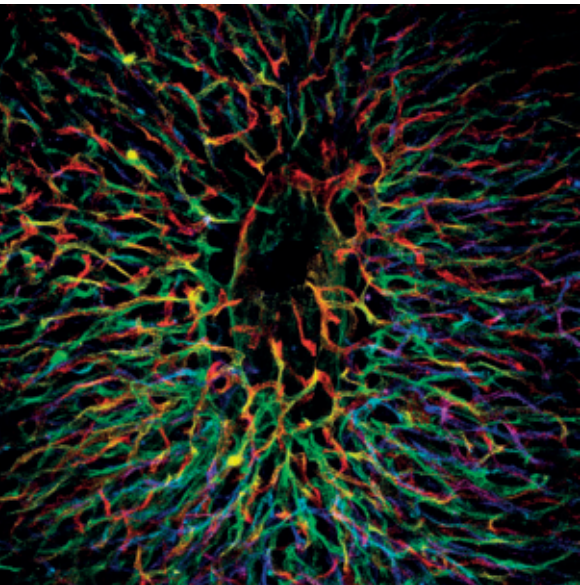
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SCIENCE

METABOLIC
GROWTH
SIGNALS AND
REGENERATIVE
MEDICINE

TEAM MEMBERS

Luke A Noon, *Principal investigator*
Matilde D' Angelo, Alberto Sánchez Almira,
Ignacio Frances Castillo



OVERVIEW

We recently identified a novel mechanism by which insulin signals drive wound healing in liver – called the “IRS2/FGF7-axis”. Our discovery provides proof-of-concept that insulin signals reduce scarring, whilst simultaneously improving paracrine communication between scar tissue and progenitors, whose job it is to promote regeneration. In 2021, we were awarded a 3-year “Plan Nacional” grant by the Spanish government to explore this pathway further and expose the cellular mechanisms underlying our discovery. We have made significant progress towards this aim by identifying a novel mediator of insulin receptor substrate 2 (IRS2) actions. We have also worked with researchers at CISIC Alberto Sols to establish a method to activate the IRS2/FGF7-axis to improve liver repair. We have also begun an exciting collaboration with researchers at UCL (UK) and Hospital La Fe (Valencia) after identifying a new cell type within the hepatic stroma with enormous potential to participate in liver physiology and disease.

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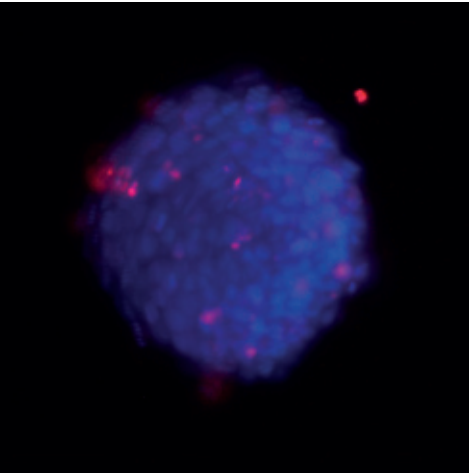
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TARGETED THERAPIES ON CANCER AND INFLAMMATION

TEAM MEMBERS

M^a del Mar Orzáez, *Principal investigator*
Mónica Sancho Medina, Federico Lucantoni,
Diego Leiva Yuste, Paula Soriano Teruel, Milagros
Buffa, Alicia García Jareño, Estefanía Barrero,
Iván Fernández Pérez, Víctor Caurín Perpiñá



HCT116 Colon Cancer spheroid.
Cells stained with Hoestch (blue)
and Propidium Iodide.

OVERVIEW

The Targeted Therapies Laboratory works on the identification and preclinical development of new modulators for cell death and inflammation.

In cell death projects, our main targets are the transmembrane interactions between proteins of the Bcl-2 family. Deregulation of the Bcl-2 interactome is associated with tumour development and acquisition of chemotherapy resistances. We work to solve the mitochondrial Bcl-2 transmembrane interactions responsible for cancer resistances and to develop new drugs targeting these interactions and triggering cancer cell death.

The main goal of our inflammation projects is to develop new inflammasome modulators. The inflammasome is one of the main components of the pro-inflammatory signalling pathway that protects our body from injury and infections. Deregulation of this protein complex is associated with the pathophysiology of autoimmune disorders, inflammatory diseases, and cancer. We work on the characterisation of new inflammasome inhibitors both as therapeutic agents and as chemical tools to understand how the inflammasome contributes to the molecular mechanisms responsible for these diseases.

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SCIENCE

PATHOPHYSIOLOGY
AND THERAPY FOR
VISION DISORDERS

TEAM MEMBERS

Regina Rodrigo Nicolás, *Principal investigator*
Lorena Olivares González, Isabel Campillo Nuevo,
Sheyla Velasco Gomariz

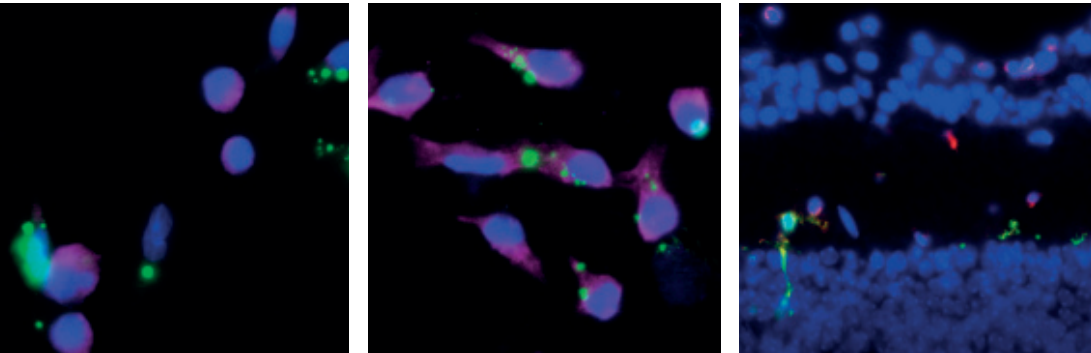
OVERVIEW

The group of Pathophysiology and Therapies for Visual Disorders is focused on searching pharmacological therapies for inherited retinal dystrophies (IRDs). We pay particular attention to cellular processes related to oxidative stress and neuroinflammation that may exacerbate IRD progression. In inflammation, we have described the relationship between retinal inflammation and IRD progression. Pharmacological manipulation with anti-TNF α agents downregulates these processes. Based on previous findings, we started a clinical trial together with the Manises hospital. The clinical trial, called ADARET, will evaluate the safety and effectiveness of intravitreal anti-TNF agents on the progression of retinitis pigmentosa, the most common form of IRDs. In oxidative stress, we have evaluated the effect of antioxidant nutraceuticals in rd10 mice and patients with retinitis pigmentosa. We published that nutraceuticals ameliorated retinal dysfunction (electroretinogram recordings), retinal degeneration and neuroinflammation. Currently, we are analyzing the delivery of anti-inflammatory or antioxidant drugs to the retina with different types of nanocarriers.

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POLYMER
THERAPEUTICS
LABORATORY

TEAM MEMBERS

M^a Jesús Vicent, *Principal investigator*
Ana Armiñán de Benito, Inmaculada Conejos-Sánchez,
María Medel, Esther Martinez, Stuart P. Atkinson,
Fernanda Rodríguez-Otormín, Paula Soriano, Tetiana
Melnik, Snežana Đorđević, Paz Boix-Montesinos, Antoni
Serrano, Inés Domingo Ortí, Camilla Pegoraro, María
Ibáñez Vives, Esther Masid, M^a Helena Ferrandis, Paula
Carrascosa, Justine Hillaert

OVERVIEW

The Polymer Therapeutics Lab develops nanopharmaceuticals as solutions for unmet clinical needs, including metastasis and neurodegeneration. Our interdisciplinary strategy begins with controlled polymer chemistry, supramolecular assembly, optimized conjugation, and physico-chemical characterization, but extends to in vivo preclinical evaluation. The ERC-Co-MyNano project, which aims to develop anticancer combination nanoconjugates, has established a family of self-assembled polypeptidic carriers. We characterized patient-derived three-dimensional breast cancer models and identified optimal personalized polypeptide-based combination nanoconjugates/functional biomarkers.

We strengthened research efforts in immuno-oncology by designing lymphotropic nanoconjugates that enhance immunomodulation in melanoma (ERC-PoC-Polymune) and pancreatic cancer (La Caixa HR-NanoPanTher) as single agent and multivalent nanovaccines. Furthermore, exhaustive characterization approaches by LC-MS and AF4 have been implemented. Research supported by MICINN and AECC-CV demonstrated how polypeptide-based nanocarriers bypass the blood-brain barrier after intravenous or intranasal administration to provide treatment opportunities for disorders including Alzheimer's disease, multiple sclerosis, pediatric tumors, and brain metastases; these studies are now reinforced with the recently awarded ERC-PoC-PolyBrait project. Finally, newly developed polypeptide-based nanoconjugates for local administration have demonstrated their benefits as single agents and combination therapies in spinal cord injury (Marató TV3, AVI).

SELECTED PUBLICATIONS

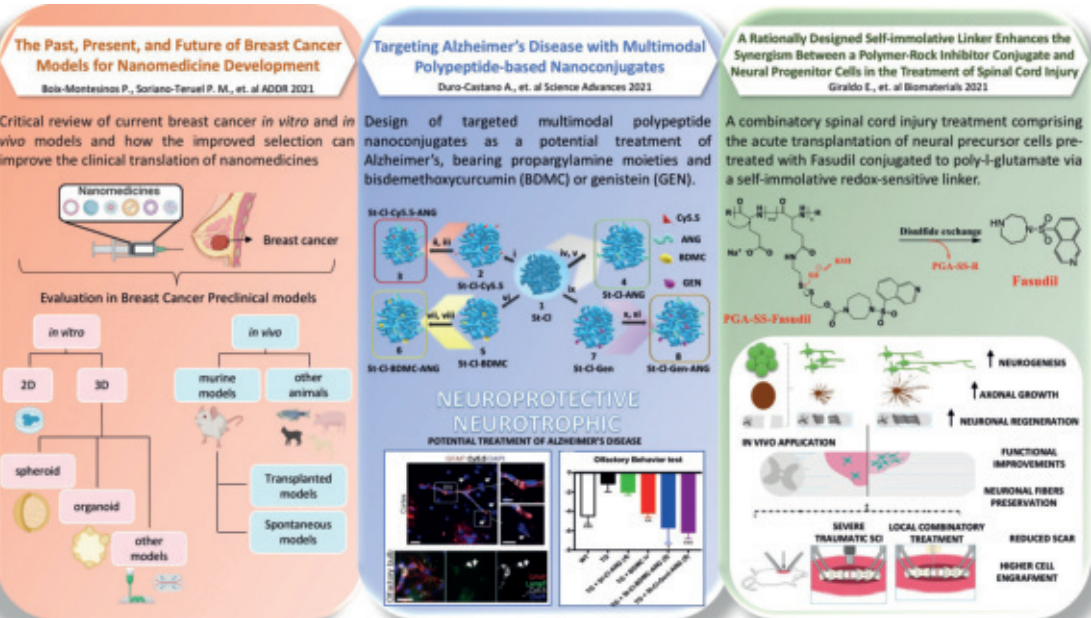
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PATENT

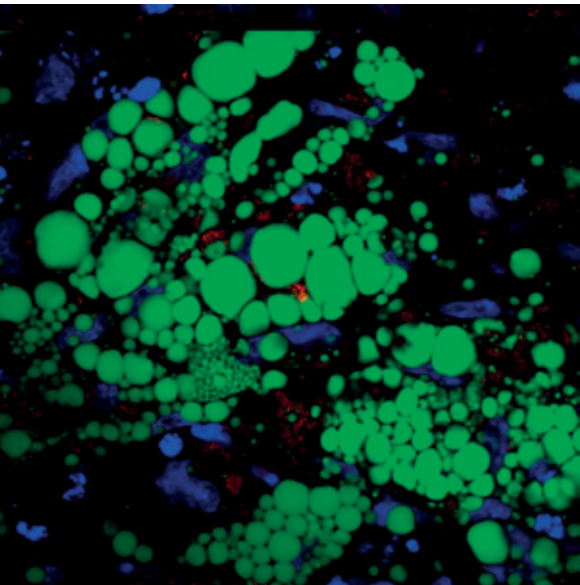
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OBESITY, DIABETES AND COMORBIDITIES

TEAM MEMBERS

Stefania Carobbio, *Principal investigator*
Carmen Navarro Gonzalez, Jaime Navarro Perez,
Elena Pérez Navarro



Picture of immunofluorescence of mature adipocytes. Green= lipidtoxgreen stain ingegnere lipid droplets. Blue= DAPI stain ingegnere nuclei.

OVERVIEW

In 2021 we just started to set up the lab. Our research is mainly focusing on healthy expansion of white adipose tissue (WAT). WAT is a critical metabolic organ that contributes to energy storage, endocrine homeostasis and metabolic flexibility by efficiently storing the surplus of fuel and quickly mobilising lipids/energy to supply peripheral organs. In the context of the current obesity epidemic, the demands imposed on the expandability and functionality of WAT are paramount, overwhelming WAT capacity to store and mobilise fat promoting the development of metabolic comorbidities.

Whereas most research aims to understand why obese people develop comorbidities, we will study the opposite paradigm, why some obese people are resilient and do not develop comorbidities.

Our question is not why obese patients develop comorbidities but how to make them resilient, and we hypothesise that this depends on the mechanisms that keep their adipose tissue healthy irrespectively of its size.

SELECTED PUBLICATIONS

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TUMOR-STROMA COMMUNICATION

TEAM MEMBERS

Juan Rodríguez Vita, *Principal investigator*
Francesca De Angelis Rigotti, Cristina Fandos Ramo

OVERVIEW

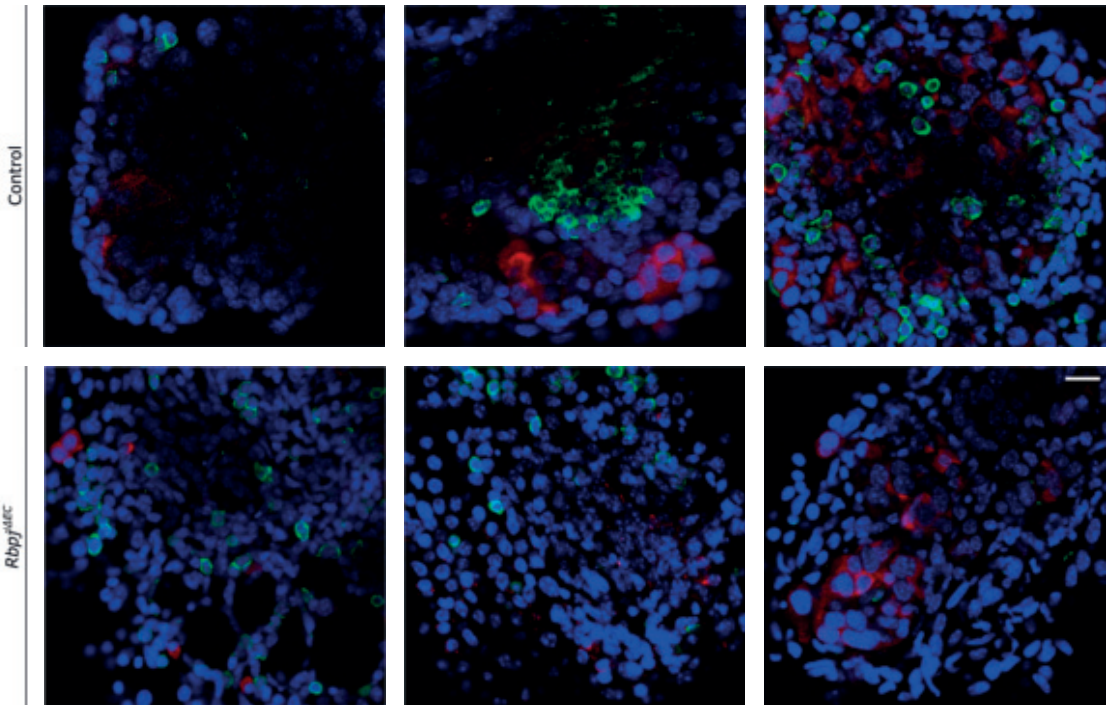
Hyaluronic acid is a master regulator of tumor stroma.

Tumor cells use signals to communicate and educate the tumor stroma. Tumor cells use hyaluronic acid (HA) to modify their stroma in order to generate a more immunosuppressive environment. HA can be synthesized as low molecular mass-HA (LMM-HA) or high molecular mass-HA (HMM-HA). In our group try to understand the mechanisms that regulated the actions of HA on stromal cells. We have uncovered that CD44-mediated HMM-HA detection by TAMs, depletes cholesterol from their plasma membranes. Cholesterol depletion alters IL-4 signaling and amplifies its responses. We have discovered that tumor cells activate the Notch signaling in ECs, which leads to the upregulation of the HA receptor CD44 in TAMs in ovarian cancer. Mechanistically, Notch signaling increases the expression of CXCL2 in ECs. CXCL2 recruits monocyte-derived macrophages. CXCL2 also increases the presence of CD44 on the membrane of TAMs, which facilitates their education by tumor cells.

SELECTED PUBLICATIONS

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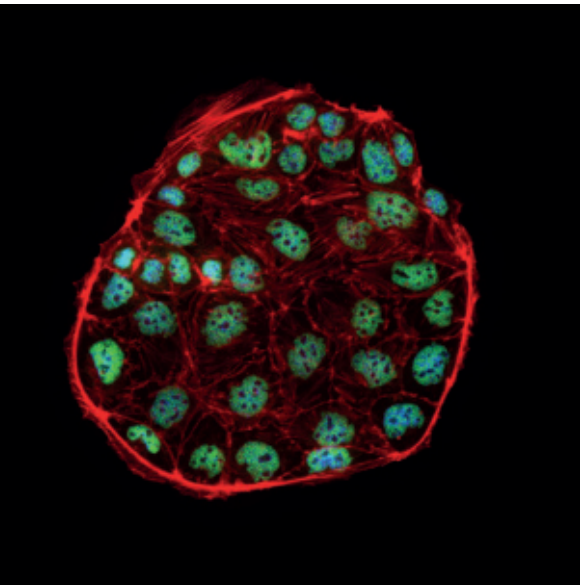
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MOLECULAR MECHANISMS OF PLACENTAL INVASION

TEAM MEMBERS

Vicente Pérez García, *Principal investigator*
Maravillas Mellado López, Paula Doria Borrell, Claudia Alemán, Érica Pedrera Alcócer, Andrea Álvarez Sánchez, María Moya Navamuel, Javier Montes Torres



OVERVIEW

The placenta is a transient organ that connects the embryo to the mother during pregnancy and mediates nutrient and oxygen supply to sustain normal growth. Functionality of the placenta depends on the earliest steps during placentation when trophoblast cells, the building block of the placenta, invade into the endometrium to establish the definitive maternal-fetal interface. Several pregnancy complications such as miscarriage and preeclampsia are caused by defects in the process of trophoblast invasion.

Intriguingly, trophoblast cells share some key similarities with carcinomas. These similarities include the ability to invade healthy tissues, the formation of new vessels and the promotion of an immunotolerant environment. A key biological question remains: do tumour cells repurpose the same genes and mechanisms that are critical for trophoblast invasion?

By using CRISPR/Cas9 genome editing systems, we will genetically manipulate trophoblast stem cells and organoids to:

Identify the molecular signatures characteristics of invasive placental cells.

Unravel the common molecular pathways between trophoblast invasion and cancer metastasis.

Our results will provide fundamental insights into the cellular invasive mechanisms that coordinate placentation and the potential implication of these same mechanisms in tumour metastasis.

SELECTED PUBLICATIONS

Sandovici I, Georgopoulou A*, Pérez-García V*, Hufnagel A, López-Tello J, Lam BYH, Schiefer SN, Gaudreau C, Santos F, Hoelle K, Yeo GSH, Burling K, Reiterer M, Fowden AL, Burton GJ, Branco CM, Sferruzzi-Perri AN, Constância M. Developmental Cell 2022 10;57(1):63-79.e8 * Equally contribution.

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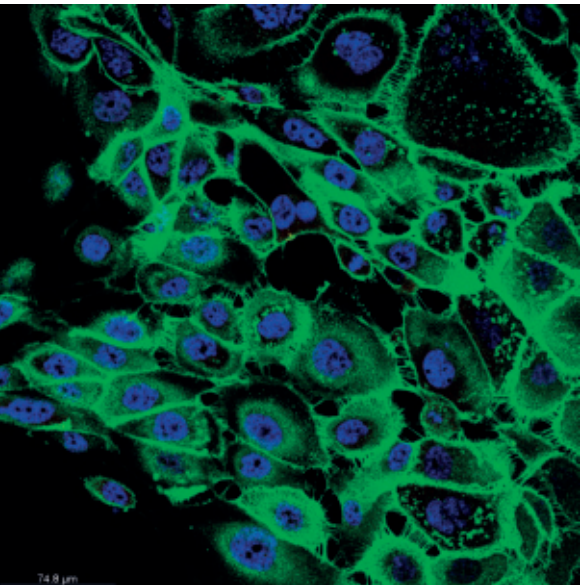
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JOINT RESEARCH UNITS

FIHGUV-CIPF
TRIAL JOINT
RESEARCH UNIT

TEAM MEMBERS

Carlos Camps Herrero and Deborah J. Burks, *Principal investigators*
Eloisa Jantus Lewintre, Silvia Calabuig Fariñas, Macarena Ferrero Gimeno, Jose Vicente Bagan Sebastian, Ricardo Guijarro, Miguel Martorell, Ana Blasco Cordellat, Alfonso Berrocal, Vega Iranzo, Eva Escorihuela, Andrea Moreno, Susana Torres



OVERVIEW

The Mixed Unit TRIAL is a translational unit whose purpose is to promote and develop oncological research focused in the search of new therapeutic approaches and biomarkers in the field of cancer immunotherapies.

During 2021 TRIAL has made significant contributions in the field of tumor immunology and tumor microenvironment in lung tumours in collaboration with national and international researchers.

We have characterized the TCR repertoire in peripheral blood of non-small cell lung cancer patients demonstrating that it may provide information about clinical outcome in the context of immune-based therapeutic approach (Dong et al, Cancers 2021).

In the area of tumour immunology and the analysis of immune-related markers, we described the role of the gut microbiota as an important factor involved in the modulation of tumor-immune interactions (Zang F et al., 2021; Dong N., 2021).

Regarding 3D models in lung cancer, the group has carried out an exhaustive characterization spheroids and organoids (Herreros-Pomares et al., 2019; Herreros-Pomares et al., 2021) and has a collection of samples obtained from patient's tumours to carry out translational studies.

SELECTED PUBLICATIONS

Dong N, Moreno-Manuel A, Calabuig-Fariñas S, Gallach S, Zhang F, Blasco A, Aparisi F, Meri-Abad M, Guijarro R, Sirera R, Camps C, Jantus-Lewintre E. Characterization of Circulating T Cell Receptor Repertoire Provides Information about Clinical Outcome after PD-1 Blockade in Advanced Non-Small Cell Lung Cancer Patients. Cancers (Basel). 2021 Jun 12;13(12):2950. doi: 10.3390/cancers13122950. PMID: 34204662; PMCID: PMC8231221.

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JOINT RESEARCH UNITS

CIPF-UPV DISEASES
MECHANISMS AND
NANOMEDICINE JOINT
RESEARCH UNIT

Developmental Biology and
Disease Mechanisms

TEAM MEMBERS

Máximo Ibo Galindo, *Principal investigator*
Andrea Tapia Gonzalez, Maria del Carmen Martín Carrascosa,
Desamparados Andrés Bordería.



OVERVIEW

The group is part of the UPV-CIPF Joint Unit, established in 2016 to promote scientific collaborations between researchers in both institutions in the fields of pathophysiology and nanomedicine. We use *Drosophila melanogaster* to study the basic biological mechanisms underlying development and disease.

We are using *Drosophila* to generate models to study rare diseases, with an especial interest in rare epileptic encephalopathies. Our ultimate goals are to understand the disease mechanisms involved and to generate new tools for biomarker and drug discovery. We have published the first *Drosophila* knock-out model for Dravet syndrome and we are currently developing another model for CDKL5 deficiency disorder. To achieve these goals, we have a network of collaborators that include groups working in *Drosophila* genetics, physiology and rare diseases, clinicians; and most important, a close partnership with the patient associations.

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Tapia A, Palomino- Schätzlein M, Roca M, Lahoz A, Pineda-Lucena A, López del Amo, V, Galindo MI. (2021) Mild muscle mitochondrial fusion distress extends *Drosophila* lifespan through an early and systemic metabolome reorganization. *International Journal of Molecular Sciences* 22:12133. doi: 10.3390/ijms222212133

Tapia A, Palomino- Schätzlein M, Giachello CM, Baines RA, Galindo MI. (2021) Generation and characterization of the *Drosophila melanogaster* paralytic gene knock-out as a model for Dravet syndrome. *Life* 11: 1261. doi: 10.3390/life11111261

JOINT RESEARCH UNITS

IBV-CIPF BIOLOGICAL
NOISE AND CELL
PLASTICITY JOINT
RESEARCH UNIT

Developmental Biology and
Disease Mechanisms

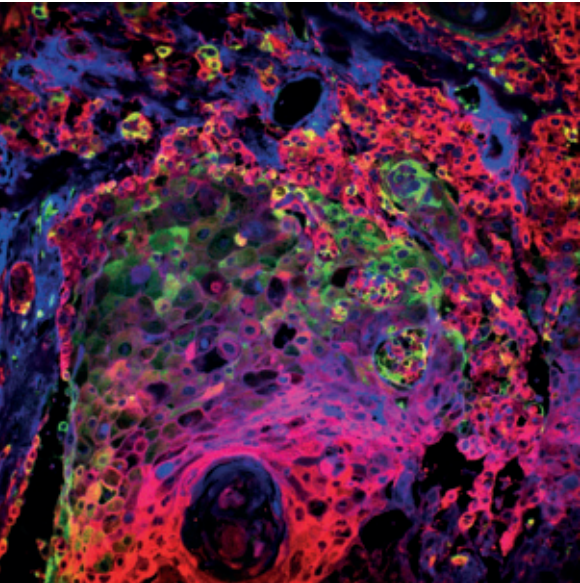
TEAM MEMBERS

Francisco José Iborra Rodríguez, *Principal investigator*
María Cristina Martí Ibáñez, María Virtudes Calabuig.

OVERVIEW

Our group is interested in the origin and consequences of biological variability. Phenotypic heterogeneity is inherent to all biological populations. This phenomenon is especially important in pathologies such as cancer, where genetically identical cells show completely different phenotypes. This phenomenon can have important consequences in human pathology. In the case of cancer, it means that when we treat tumours, not all cells respond to treatment, and those cells that survive are responsible for relapses and the generation of treatment-induced metastasis.

One of the factors contributing to this heterogeneity is the mitochondrial content, which is segregated asymmetrically and stochastically during mitosis. This asymmetric division ensures cells with different mitochondrial content, and because mitochondria are modulators of gene expression, they facilitate different gene expression between genetically identical cells. We are now studying how perturbations of mitochondrial function may contribute to variability in gene expression, as well as other factors that contribute to cellular heterogeneity and plasticity.



Heterogeneity in gene expression in tumors. Squamous cell carcinoma
Showing variability in the expression of three proteins.

JOINT RESEARCH UNITS

CIPF-UPV DISEASES MECHANISMS AND NANOMEDICINE JOINT RESEARCH UNIT

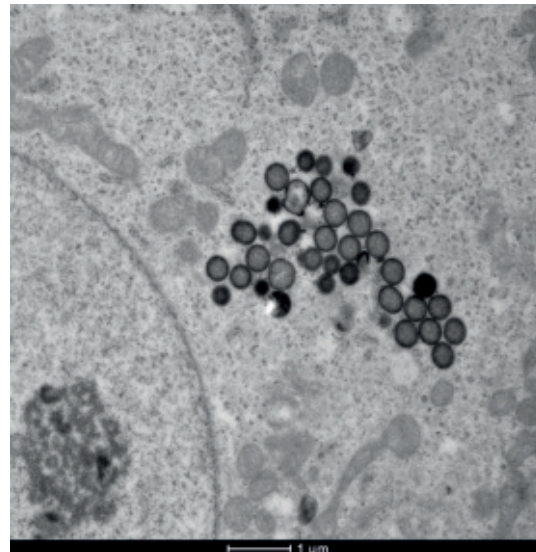
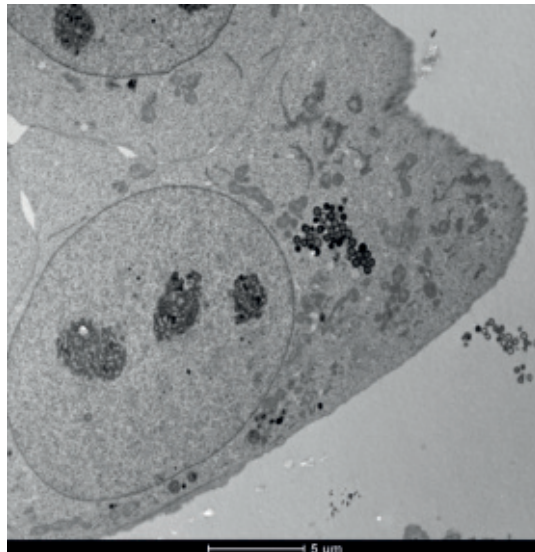
Nanomedicine

TEAM MEMBERS

Ramón Martínez Máñez, *Principal investigator*

Félix Sancenón Galarza, María Dolores Marcos Martínez, José Ramón Murguía Ibáñez, Andrea Bernardos Bau, Alba García Fernández, Alejandra Estepa Fernández, Araceli Lérída Viso, Elena Lucena Sánchez, Blanca Escriche Navarro, Andrea Escudero Noguera, Marina Botello Marabotto, Javier Martínez Latorre, Juan José Esteve Moreno, Angela Morella Aucejo.

Mesoporous silica nanoparticles
uptake by cancer cells.



OVERVIEW

Prof. Ramón Martínez Máñez 's group (IDM-UPV) works on the development of new treatments from a multidisciplinary point of view and apply the latest advances in nanomedicine to solve health problems. This multidisciplinary research includes from the synthesis of molecular probes and nanoparticles, their physico-chemical characterization as well as their evaluation in vitro and in vivo preclinical models of cancer and senescence, among others. During 2021, the group has continued with an intense scientific activity publishing 22 articles that described the development of different systems applied to both diagnosis and therapy in different diseases. In the context of the joint research unit, we can highlight our research in the arisen field of chemical communication between nanosystems. In addition, to point our work related to the development of targeted-lung nanoparticles for the treatment of devastating acute lung injury as well as the development of new self-propelled nanosystems for cancer therapy.

SELECTED PUBLICATIONS

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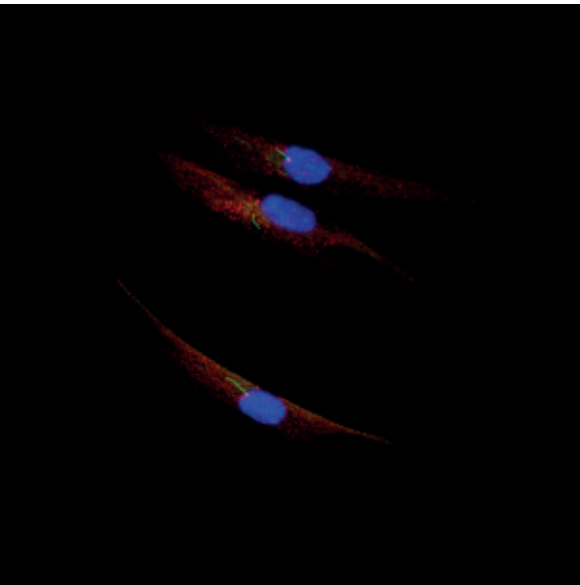
de Luis B, Llopis-Lorente A, Sancenón F, Martínez-Máñez R. Engineering chemical communication between micro/nanosystems. *Chemical Society Reviews*. 2021, 50, 8829-8856.

Díez P, Lucena-Sánchez E, Escudero A, Llopis-Lorente A, Villalonga R, Martínez-Máñez R. Ultrafast Directional Janus Pt-Mesoporous Silica Nanomotors for Smart Drug Delivery. *ACS Nano*. 2021, 15, 4467-4480.

IIS LA FE-CIPF JOINT RESEARCH UNIT FOR RARE DISEASES

TEAM MEMBERS

José M. Millán, Carmen Espinós, *Principal investigators*
Elena Aller, Teresa Jaijo, Rafael Vázquez Manrique, Gema García-García, Ana Pilar Gómez Escribano, Andrea Carranza, Belén García Bohórquez, Alba Berzal Serrano, Cristina Trujillo del Río, Julia Tortajada Pérez, M^a Cinta Navarro Moreno, Pilar Barberán Martínez.



Starvation-generated cilia in human fibroblasts. In red, TAPT1 marking the basal body. In green acetylated tubulin marking the axoneme.

OVERVIEW

In 2021 our team has four main research lines for rare diseases: inherited retinal dystrophies (IRD) including the Usher syndrome (USH), Huntington's disease (HD), spinal muscular atrophy (SMA) and primary ciliar dyskinesia (PCD). We follow the main objectives of the International Research for Rare Diseases Consortium (IRDiRC): to investigate to improve diagnosis and to develop therapies.

Our strategies allow to resolve the molecular diagnosis of over 80% of the USH syndrome patients and about 60% of IRDs. We are sequencing whole exomes and whole genomes to find novel genes or novel molecular defects in the unsolved cases of IRD, USH and PCD.

We have started the newborn screening of SMA and we aim to screen all the babies born in the Valencian Community in one year (estimation of 35,000-40,000). The emergence of treatments for this devastating disease that are effective when they are administered very early, preferably in asymptomatic children prompted us to develop this screening.

We have also started a therapeutical approach for autosomal dominant IRDs based in camelid's nanobodies.

Finally, we are looking for therapeutical targets for HD and we have also started a clinical trial in patients with HD.

SELECTED PUBLICATIONS

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García Bohórquez B, Aller E, Rodríguez Muñoz A, Jaijo T, García García G, Millán JM. Updating the Genetic Landscape of Inherited Retinal Dystrophies. *Front Cell Dev Biol.* 2021 Jul 13;9:645600. doi: 10.3389/fcell.2021.645600

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JOINT RESEARCH UNITS

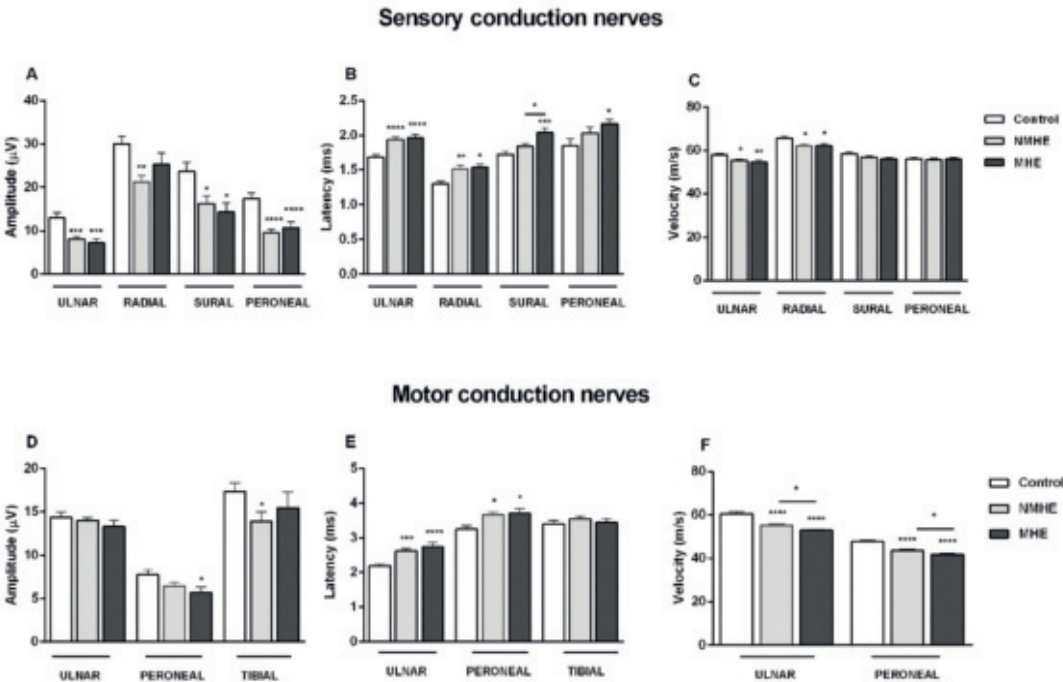
CIPF-INCLIVA
NEUROLOGICAL
IMPAIRMENT JOINT
RESEARCH UNIT

TEAM MEMBERS

Maria Pilar Ballester, Juan José Gallego, Franc Casanova, Alessandra Fiorillo, Dalia Rega, Critina Ipiens, Mika Aiko, Amparo Escudero, Paloma Lluch, Joan Tosca, Cristina Montón, José Ballester, José Luis Leon, Roberto Aliaga, Paula Cases, Rut Vitorio, Nicolas Peñaranda, Alberto Sabio, Alejandra Hernández.

Marta Llansola, Amparo Urios, Carla Giménez Garzó, María Sancho, Paula Izquierdo, Paola Leone, Yaiza Arenas, Gergana Ivaylova; Ivan Atienza, Mar Martínez, Mari Carmen Castro.

Cirrhotic patients with an without MHE show alterations in motor and nerve conduction.



OVERVIEW

The Joint Unit on Neurological Impairment CIPF-INCLIVA performs basic and translational research on cognitive and motor alterations in patients with liver diseases: cirrhotic patients showing minimal hepatic encephalopathy (MHE) and patients with non-alcoholic fatty liver disease showing mild cognitive impairment (MCI).

The aims are:

In animal models

Unveil the molecular mechanisms leading to neurological impairment

Identify new therapeutic targets for its treatment

Design and assess new therapeutic procedures to reverse neurological impairment

In patients

Study the mechanisms, diagnosis and treatment of neurological impairment.

Identify early diagnostic procedures for neurological impairment.

Bring to the clinic the diagnostic procedures identified.

We focus in understanding the role of hyperammonemia and peripheral inflammation in the induction of cognitive and motor impairment, analysing the shift in peripheral inflammation associated to the triggering of MHE and MCI. We also analyse how changes in peripheral inflammation are transmitted to brain to induce neuroinflammation, alterations in neurotransmission and cognitive and motor impairment.

We have shown that rifaximin improves MHE in many patients. We try to understand the underlying mechanisms to increase the number of patients recovering neurological function.

SELECTED PUBLICATIONS

Rega D, Aiko M, Peñaranda N, Urios A, Gallego JJ, Giménez-Garzó C, Casanova F, Fiorillo A, Cabrera-Pastor A, San-Miguel T, Ipiens C, Escudero-García D, Tosca J, Montón C, Ballester MP, Ballester J, Aparicio L, Ríos MP, Durbán L, Mir A, Kosenko E, Cases P, Felipe V, Montoliu C. (2021) Patients with Minimal Hepatic Encephalopathy Show Altered Thermal Sensitivity and Autonomic Function. *Journal of Clinical Medicine*; 10(2):239.

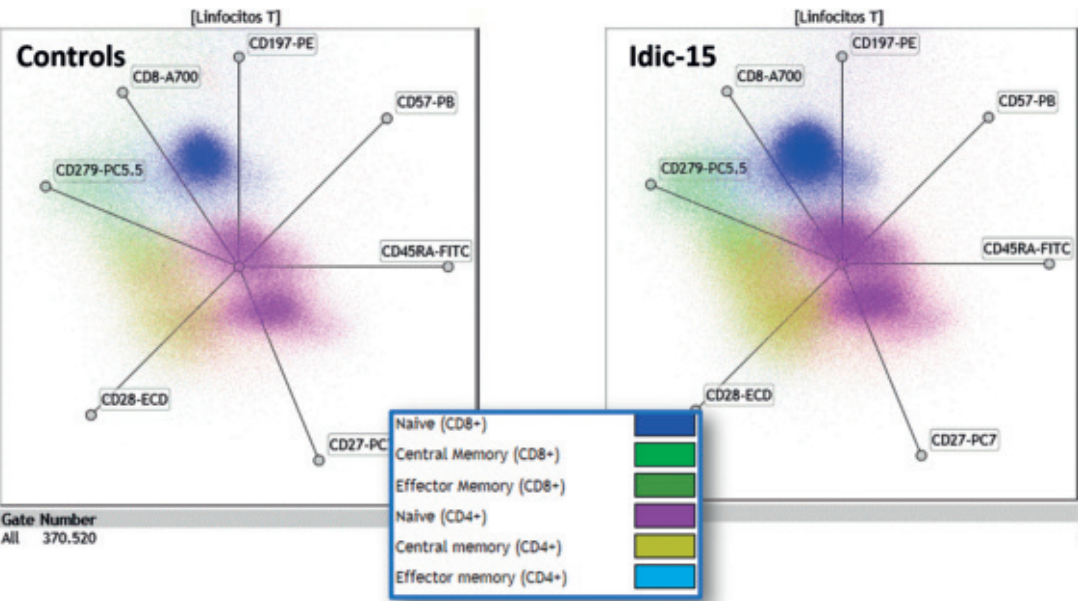
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Giménez-Garzó C, Fiorillo A, Ballester-Ferré MP, Gallego JJ, Casanova-Ferrer F, Urios A, Benlloch S, Martí-Aguado D, San-Miguel T, Tosca J, Ríos MP, Montón C, Durbán L, Escudero-García D, Aparicio L, Felipe V, Montoliu C. (2021) A New Score Unveils a High Prevalence of Mild Cognitive Impairment in Patients with Nonalcoholic Fatty Liver Disease. *Journal of Clinical Medicine*.10(13):2806.

CYTOMICS RESEARCH UNIT

TEAM MEMBERS

Jose Enrique O'Connor and Alicia Martínez, *Principal investigators*
Beatriz Jávega Martínez, Guadalupe Herrera Martín, Domingo Gil Casanova.



OVERVIEW

The joint unit between Universitat de València and CIPF focuses its activity in biomedicine, particularly in the cellular functional study in Immunopathology and Regenerative Medicine; and the development of in vitro cytoxic assays predictive of acute and chronic toxicity in humans and animals. Main lines of research:

- Search for biomarkers related to oxidative stress and inflammation in patients with eye and olfactory pathologies.
- Study by flow cytometry of immunological alterations in patients with Idic-15 Syndrome, a rare disease of the Autism Spectrum.
- Development of flow cytometry methods for immunological monitoring in marine mammals.
- Study by flow cytometry of the immunophenotype in patients with liver disease.
- Development of an immunoassay based on miniaturized microscopy for the detection of soluble antigens.

In 2021 the Unit continued its main scientific line related to the application of Cytomics to discover immunophenotypic biomarkers useful for risk prediction or for monitoring immune function both in humans and marine mammals. Advanced cytoxic analysis of our data on young patients of Idic-15 syndrome, a neurological rare disease, showed that specific alterations in T-cell and B-cell subpopulations were stronger predictors of infection risk than genetic lesion parameters. These observations were suggestively associated to gender- and behavioural descriptors. On the other hand, we accomplished our study on developing and applying methods for immune monitoring in marine mammals, as highlighted by the presentation of the results in a Ph.D. defense in September 2021. Our Unit has started successfully new lines of scientific collaboration with groups in external institutions (Fisabio, Incliva) related to the discovery of oxidative-stress and inflammation biomarkers in patients with ophtalmic and olphactory diseases. In addition, our Unit has continued its significant involvement in educational activities in the field of Cytometry and Cytomics.

SELECTED PUBLICATIONS

Raga-Cervera J, Bolarin JM, Millan JM, Garcia-Medina JJ, Pedrola L, Abellán-Abenza J, Valero-Vello M, Sanz-González SM, O'Connor JE, Galarreta-Mira D, Bendala-Tufanisco E, Mayordomo-Febrer A, Pinazo-Durán MD, Zanón-Moreno V. miRNAs and Genes Involved in the Interplay between Ocular Hypertension and Primary Open-Angle Glaucoma. Oxidative Stress, Inflammation, and Apoptosis Networks. J Clin Med. 2021 May 21;10(11):2227. doi: 10.3390/jcm10112227.

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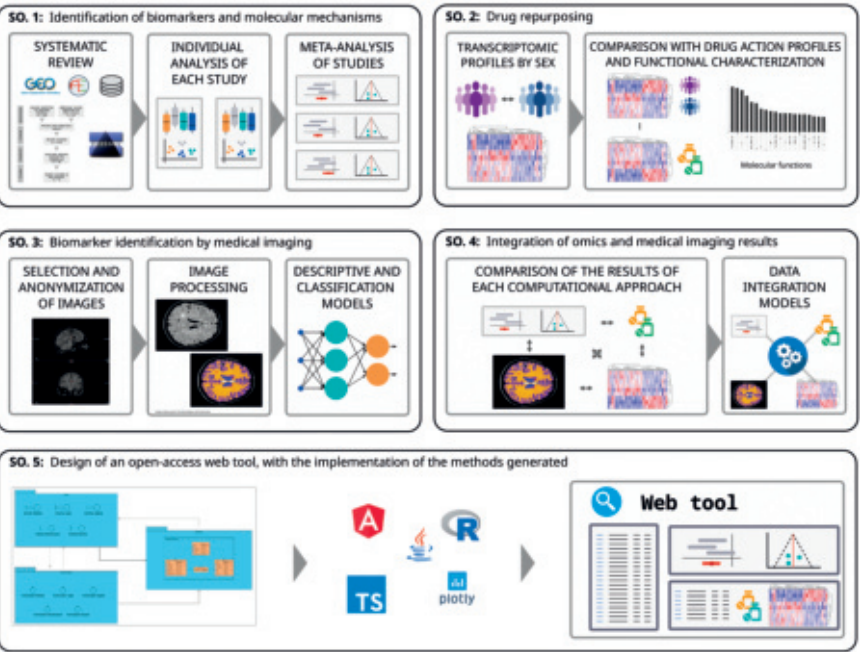
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FISABIO-CIPF BIOMEDICAL IMAGING JOINT RESEARCH UNIT

TEAM MEMBERS

Mariam de la Iglesia (FISABIO), Francisco García (CIPF),
Principal investigators

Marta R. Hidalgo García, Rubén Sánchez García (CIPF),
Irene Pérez, Díez, José Manuel Saborit Torres, Joaquim
Montell Serrano, Adolfo López, Cerdán, Jhon J. Saenz
Gamboa, Elena Oliver García, Marisa Caparrós, Redondo,
Julio Doménech Fernández, Silvia Nadal Almela, Héctor
Carceller Cerdá.



OVERVIEW

The FISABIO-CIPF Joint Unit of Biomedical Imaging is expert in the anonymisation, curation, and processing of medical image data through the application of artificial intelligence and radiomics techniques. Our work involves the creation of medical imaging data lakes, and application of anonymisation, segmentation, and data curation techniques for medical images. We apply various artificial imaging techniques to study biomarkers in these images.

In 2021 we have developed various tools in this area, through participation in the European project Deep-Learning and HPC to boost biomedical applications for health (DeepHealth) and the start of two major national projects: IMPaCT-DATA consisting of the development of a data integration and analysis environment that includes the ability to both answer questions from clinical groups and TARTAGLIA: Federated network to accelerate the application of artificial intelligence in the Spanish Health System. Participation includes research in the fields of Alzheimer's disease, lumbar spine, and pulmonary conditions.

SELECTED PUBLICATIONS

Daniel Arias-Garzón, Jesús Alejandro Alzate-Grisales, Simon Orozco-Arias, Harold Brayan Arteaga-Arteaga, Mario Alejandro Bravo-Ortiz, Alejandro Mora-Rubio, Jose Manuel Saborit-Torres, Joaquim Àngel Montell Serrano, Maria de la Iglesia Vayá, Oscar Cardona-Morales, Reinel Tabares-Soto, COVID-19 detection in X-ray images using convolutional neural networks, Machine Learning with Applications, Volume 6, 2021, 100138, ISSN 2666-8270, <https://doi.org/10.1016/j.mlwa.2021.100138>.
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JOINT RESEARCH UNITS

INCLIVA-CIPF
RARE DISEASES
JOINT
RESEARCH UNIT

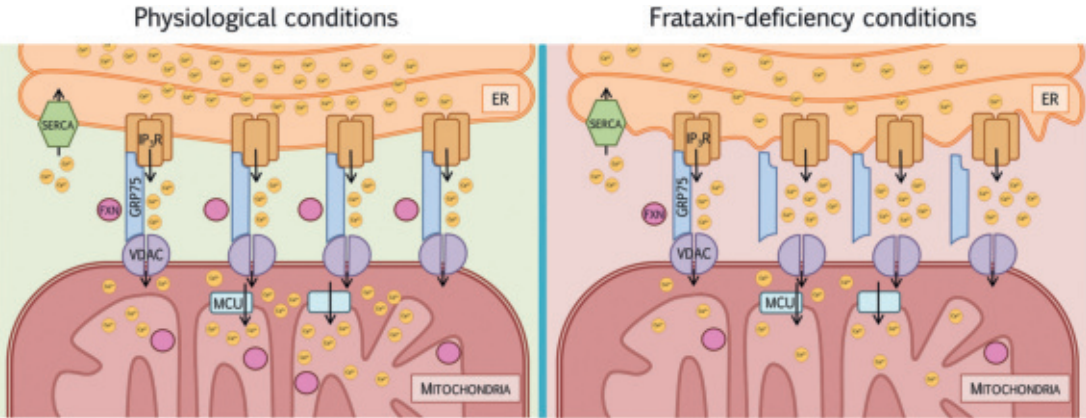
TEAM MEMBERS

Carmen Espinós (CIPF), Federico V. Pallardó (INCLIVA),
Principal investigators

Carlos Romá, José Manuel Torres, Pilar González Cabo,
José Luis García Gimenez, Juan Antonio Navarro Langa,
Marta Seco, Noelia Benetó, Concepción Garcés, Laura
Rodríguez, Tamara Lapeña, Vicent Beltrán.

M. Dolores Martínez-Rubio, Ana Sánchez-Monteaigudo,
Amparo Andrés-Bordería, Isabel Hinarejos, Edna Ripollés.

Friedreich ataxia (FRDA) is caused by
mutations in the FXN gene, which results in
loss of the mitochondrial protein frataxin.



OVERVIEW

We are currently working on several research lines:

- Pathophysiology of Friedreich's ataxia and other neuromuscular diseases
- Development of new therapeutic strategies for Friedreich's ataxia
- Development of new biomarkers in both adult and neonatal sepsis
- Pathophysiology of epileptic disorders
- Epigenetic regulation in the pathophysiology of rare diseases
- Epigenetic regulation of immunosuppression events in patients from Intensive Care Units.

SELECTED PUBLICATIONS

Pallardo FV, Pagano G, Rodriguez Melguizo L, González Cabo P, Lyakhovich A, Trifuoggi M. Friedreich Ataxia: current state-of-the-art, and future prospects for mitochondrial-focused therapies. Translational Research. 2021 Mar;229:135-141. doi: 10.1016/j.trsl.2020.08.009. PMID: 32841735.

Fatmi A, Chabni N, Cernada M, Vento M, Gonzalez-Lopez M, Aribi M, Pallardo FV, Garcia-Gimenez JL. Clinical and immunological aspects of microRNAs in neonatal sepsis. Biomedicine & Pharmacotherapy. 2021 Nov 19;145:112444. doi: 10.1016/j.biopha.2021.112444. PMID: 34808550.

Beltran-Garcia J, Manclus J, Garcia-Lopez E, Carbonell N, Ferreres J, Rodriguez-Gimillo M, Garces C, Pallardo F, Garcia-Gimenez J, Montoya A, Roma-Mateo C. Comparative analysis of chromatin-delivered biomarkers in the monitoring of sepsis and septic shock: a pilot study. International Journal of Molecular Sciences. 2021 Sep 14;22(18):9935. doi: 10.3390/ijms22189935. PMID: 34576097.

JOINT RESEARCH UNITS

IVO-CIPF
JOINT RESEARCH
UNIT IN CANCER

TEAM MEMBERS

José Antonio López Guerrero (IVO), M^a Jesús Vicent Docón (CIPF),
Mar Orzáez Calatayud (CIPF) *Principal investigators*

Francisco García García (UBB-CIPF), María de la Iglesia Vayá María (FISABIOCIPF),
María García Flores, Antonio Fernández Serra, Raquel López Reig, Ángel Guerrero
Zotano, Belén Pastor Navarro (IVO)

OVERVIEW

The mission of the Joint Research Unit in Cancer IVO-CIPF is to translate the basic research performed at the CIPF into clinical scenarios and vice versa. We mainly focus on the discovery of new molecules that could play a role as prognostic or predictive biomarkers. In addition, we explore the design of new drugs as well as new therapeutic combinations which we test in appropriate cell and animal models. One of our tasks is also to develop new diagnostic tools based on next generation sequencing.

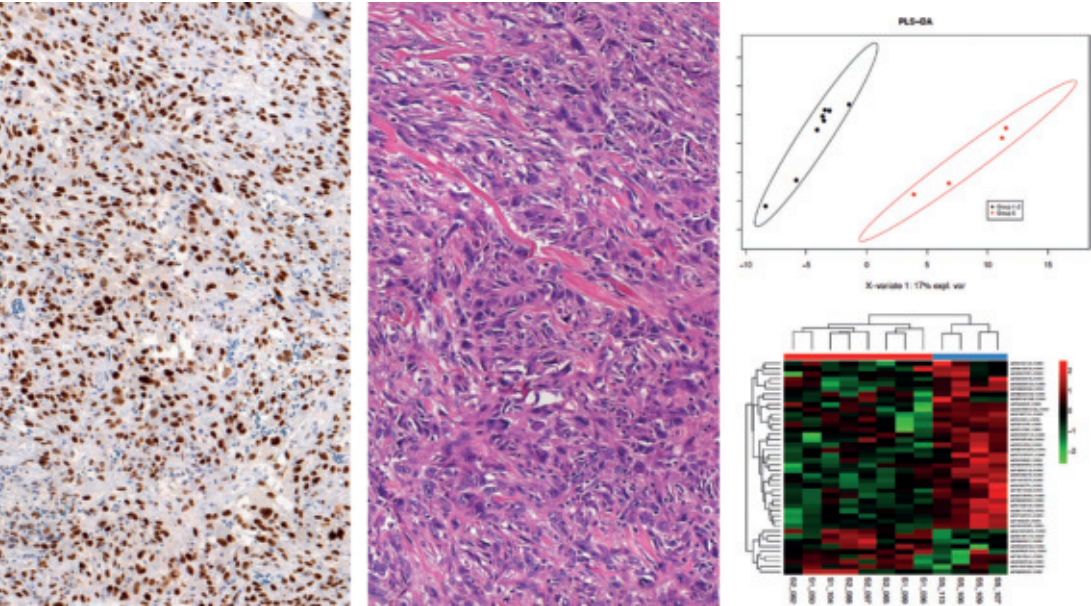
SELECTED PUBLICATIONS

Isolation and characterization of urine microvesicles from prostate cancer patients: different approaches, different visions. García-Flores M, Sánchez-López CM, Ramírez-Calvo M, Fernández-Serra A, Marcilla A, López-Guerrero JA. BMC Urol. 2021 Sep 27;21(1):137. doi: 10.1186/s12894-021-00902-8. PMID: 34579682

Active Surveillance in Prostate Cancer: Role of Available Biomarkers in Daily Practice. Pastor-Navarro B, Rubio-Briones J, Borque-Fernando Á, Esteban LM, Domínguez-Escrig JL, López-Guerrero JA. Int J Mol Sci. 2021 Jun 10;22(12):6266. doi: 10.3390/ijms22126266. PMID: 34200878

Real-world experience with trabectedin for the treatment of recurrent ovarian cancer. Romero I, López-Guerrero JA, Pignata S. Expert Rev Anticancer Ther. 2021 Oct;21(10):1089-1095. doi: 10.1080/14737140.2021.1941890. Epub 2021 Jun 21. PMID: 34128757

From Histopathology to Molecular
Biotypes of cancer.



S O C I E T Y



S O C I E T Y

CIPF_ Dissemination and outreach events

Before the confinement due to the COVID-19 pandemic, we organised and hosted several conferences, seminars, and events, while in the months subsequent to the lockdown we moved all of these activities online. We were able to adapt to the situation very quickly thanks to our IT team and the technology available at the CIPF, allowing our scientists to carry on with this important aspect of their careers: collaborating, networking, and sharing knowledge. Nonetheless, we recognize that although technologies represent interesting tools for scientific events, in-person meetings create so many other opportunities that virtual meetings cannot replicate.

EVENTS

34

PRESS RELEASES

23

CIPF IN THE MEDIA

54

CIPF_ in the media

Total visits to the CIPF website www.cipf.es_ 152.421

SOCIAL MEDIA FOLLOWERS



Twitter_ 4.998



Facebook_ 2.278



LinkedIn_ 5.425



Youtube Views_ 34.580



Instagram_ 298

Seminars

June 4th

Paula Soriano

INFLAMMATORY TUMOR MICROENVIRONMENT AS TARGET IN THE DESIGN OF NANOCONJUGATES FOR THE TREATMENT OF ADVANCED BREAST CANCER

Carlos Manuel Cuesta

METAGENOMIC ANALYSES OF CHRONIC ALCOHOLIC MICE AND THE IMPACT OF TOLL-LIKE RECEPTOR 4 IN GUT MICROBIOTA AND INTESTINE

June 18th

Marina Sánchez Petidier

TOLL-LIKE RECEPTORS IN SPINAL CORD DERIVED NEURAL PRECURSOR CELLS: IMPLICATIONS ON SPINAL CORD INJURY AND CELL TRANSPLANTATION

Teresa Rubio Martínez-Abarca

MULTI-OMIC ANALYSIS TO IDENTIFY IMMUNE SYSTEM ALTERATIONS ASSOCIATED WITH THE APPEARANCE OF MINIMAL HEPATIC ENCEPHALOPATHY IN CIRRHOTIC PATIENTS.

July 16th

Ana Sánchez Monteagudo

CIRCULATING MIRNAS PROFILING IN PLASMA AS BIOMARKERS IN WILSON DISEASE

Candela Machuca Arellano

MULTI-OMIC ANALYSIS TO IDENTIFY IMMUNE SYSTEM ALTERATIONS ASSOCIATED WITH THE APPEARANCE OF MINIMAL HEPATIC ENCEPHALOPATHY IN CIRRHOTIC PATIENTS. CEREBELLAR PURKINJE CELL MODEL GENERATION BASED IN IPSCS TECHNOLOGY FOR THE STUDY OF TWO RARE NEURODEGENERATIVE DISEASES: AUTOSOMAL RECESSIVE SPASTIC ARSACS AND PLAN

July 22nd

Alexandre Medina

EFFECTS OF DEVELOPMENTAL ALCOHOL EXPOSURE ON SENSORY PROCESSING

September 17th

Anna Labernadie

MECHANOBIOLOGY OF THE TUMOUR MICROENVIRONMENT DRIVING CANCER SPREADING AND IMMUNE CELLS TRAFFICKING

September 24th

Paz Boix

OPTIMIZATION OF ACCURATE BREAST CANCER MODELS FOR THE ADVANCED PRECLINICAL EVALUATION OF POLYMER THERAPEUTICS

Francesc Ibañez

ROLE OF EXTRACELLULAR VESICLES DURING ETHANOL INDUCED NEUROINFLAMMATION IN ADOLESCENCE

October 29th

Sheyla Velasco

ANTI-INFLAMMATORY THERAPIES FOR THE TREATMENT OF RETINITIS PIGMENTOSA

Arantxa Martínez

ROLE OF THE POLYAMINE-HYPUSINE-EIF5A IN CANCER PROGRESSION

November 26th

Isabel Hinarejos

MOLECULAR BASIS OF NEURODEGENERATION WITH BRAIN IRON ACCUMULATION AND RELATED SYNDROMES

Mª José Arámbul

REGULATION OF PARACRINE TISSUE REPAIR SIGNALS BY INSULIN

December 17th

Inés Domingo

USING NMR-MEDIATED METABOLOMICS TO CHARACTERIZE BREAST CANCER-ASSOCIATED ALTERATIONS TO VITAL BIOCHEMICAL PATHWAYS

Amparo Andrés

EPILEPSY STUDY: SEARCH FOR DIAGNOSIS/ PROGNOSTIC BIOMARKERS.



Paula Soriano and Carlos M. Cuesta_ *Seminars*



Marina Sánchez and Teresa Rubio_ *Seminars*



Ana Sánchez and Candela Machuca_ *Seminars*



Alexandre Medina_ *Seminar*



Anna Labernadie_ *Seminar*



Paz Boix and Paco Ibáñez_ *Seminars*



Sheyla Velasco and Arantxa Martínez_ *Seminars*



Isabel Hinarejos_ *Seminar*



María José Arámbul_ *Seminar*



Inés Domingo and Amparo Andrés_ *Seminars*

Doctoral Thesis

28/05/2021

MOLECULAR GENETICS AND BIOMARKERS OF
WILSON'S DISEASE

Ana Sánchez Monteagudo_ *Doctoral Student*
Carmen Espinós, Vincenzo Lupo_ *Directors*

21/06/2021

MESOPOROUS SILICA AND GOLD-BASED NANODEVICES:
NEW CONTROLLED DELIVERT PLATFORM FOR BIOMEDICAL
APPLICATIONS

Gema Vivó Llorca_ *Doctoral Student*
Mar Orzáez, Ramón Martínez, José Ramón Murguía_ *Directors*

26/07/2021

MOLECULAR APPROACHES FOR THE IDENTIFICATION OF NEW
BIOMARKERS AND THERAPEUTIC TARGETS OF NON-SMALL
CELL LUNG CANCER: TUMOR STEM CELLS, EPITHELIAL-
MESENCHYMAL TRANSITION AND PATIENT-DERIVED XENOGRFT
MODELS

José Miguel Pardo Sánchez_ *Doctoral Student*
Rosa Farràs Rivera_ *Director*
José Ramón Murguía Ibáñez_ *Tutor*

03/09/2021

ROLE OF EXTRACELLULAR VESICLES IN THE PROPAGATION
AND MAINTENANCE OF NEUROINFLAMMATION INDUCED BY
ALCOHOL CONSUMPTION IN ADOLESCENCE

Francesc Ibañez Cabanes_ *Doctoral Student*
Consuelo Guerri Sirera, María Pascual Mora_ *Directors*

17/12/2021

ALTERATIONS IN NEUROTRANSMISSION IN THE HIPPOCAMPUS
OF HYPERAMMONAEMIC RATS. ROLE OF NEUROINFLAMMATION.
MODULATION BY EXTRACELLULAR GMPC.

María Sancho Alonso_ *Doctoral Student*
Vicente Felipo, Andrea Cabrera Pastor, Marta Llansola_ *Directors*

ANA SÁNCHEZ MONTEAGUDO
Doctoral Thesis



GEMA VIVÓ LLORCA
Doctoral Thesis



JOSÉ MIGUEL PARDO SÁNCHEZ
Doctoral Thesis



FRANCESC IBAÑEZ CABANES
Doctoral Thesis



MARÍA SANCHO ALONSO
Doctoral Thesis



Margarita Salas

1938-2019. Investigadora Española en Bioquímica y Biología molecular

Las mujeres en la ciencia cambian el mundo

Women in science change the world

11 DE FEBRERO

Día Internacional de la Mujer y la Niña en la Ciencia

International Day of Women and Girls in Science

PRINCIPE FELIPE CENTRO DE INVESTIGACIÓN

GENERALITAT VALENCIANA Conselleria de Sanitat Universal i Salut Pública

TOTS A UNA EUROPEA Fondo Europeo de Desarrollo Regional

11Febrero

Rosalind Franklin

1920-1958 Chemist, X-ray crystallographer
Solved structure of DNA helix

Investigación Genómica: clave para nuestra salud

Genomics Research: a key to human health

25th April

World DNA day

Día Internacional del ADN

PRINCIPE FELIPE CENTRO DE INVESTIGACIÓN

GENERALITAT VALENCIANA Conselleria de Sanitat Universal i Salut Pública

TOTS A UNA EUROPEA Fondo Europeo de Desarrollo Regional

11Febrero

21th SEPTEMBER

World Alzheimer's Day

Día Mundial del Alzheimer

Alzheimer: Investigar es la esperanza

Research is the only hope for curing Alzheimer's

PRINCIPE FELIPE CENTRO DE INVESTIGACIÓN

GENERALITAT VALENCIANA Conselleria de Sanitat Universal i Salut Pública

TOTS A UNA EUROPEA Fondo Europeo de Desarrollo Regional

11Febrero

24th SEPTEMBER

World Cancer Research Day

Día Mundial de la Investigación en Cáncer

Luchamos contra el cáncer con investigación

We fight cancer with research

PRINCIPE FELIPE CENTRO DE INVESTIGACIÓN

GENERALITAT VALENCIANA Conselleria de Sanitat Universal i Salut Pública

TOTS A UNA EUROPEA Fondo Europeo de Desarrollo Regional

11Febrero

J.B. Collip · J.J.R. Macleod · F.G. Banting · C.H. Best

The Nobel Prize in Physiology or Medicine 1921

100 years of insulin: a discovery that saves lives

Insulina: 100 años salvando vidas

14th NOVEMBER

World Diabetes Day

Día Mundial de la Diabetes

PRINCIPE FELIPE CENTRO DE INVESTIGACIÓN

GENERALITAT VALENCIANA Conselleria de Sanitat Universal i Salut Pública

TOTS A UNA EUROPEA Fondo Europeo de Desarrollo Regional

11Febrero

Outreach

18/02/2021

Toy collections for Fundación Colegios Siglo XXI

28/04/2021

Opening of the Exhibition "A vivir que son 100 años"

11/06/2021

Clothes collect for KOOPERA

28/09/2021

International Science Culture Day: Chemistry is Cool.
Invisible but real nanopharmaceuticals

CIPF Visits

05/03/2021

GENERALITAT, VICE-PRESIDENT
RUBÉN MARTÍNEZ DALMAU



19/07/2021

ALICIA ROMERO LLANO,
FROM CATALONIA
PARLIAMENT, PSC GROUP



CIPF_ Events

IMPACT OF THE COVID19 PANDEMIC ON WOMEN IN RESEARCH. ONLINE CONFERENCE TO CELEBRATE THE 11TH OF FEBRUARY, INTERNATIONAL DAY OF WOMEN AND GIRLS IN SCIENCE. WITH JAVIER S. BURGOS, PALMIRA MUÑOZ, DEBORAH BURKS, MARIA TERESA RUIZ CANTERO AND ELENA MARBÁN.

International Day of Women and Girls in Science

WOMEN, SCIENCE & HEALTH

Impact of the COVID19 Pandemic on women in biomedical research

Thursday, 15:00 11/02/2021

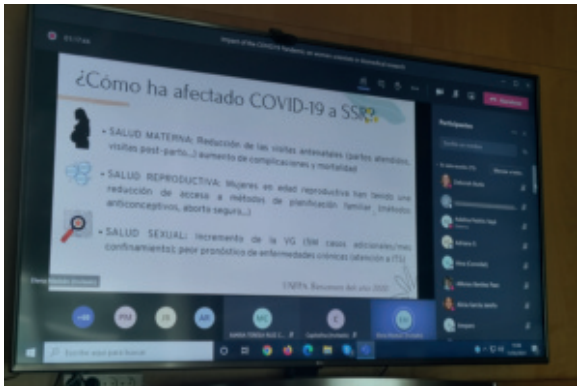
ONLINE MEETING

MODERATOR
Deborah Burks CIPF

SPEAKERS
M^a Teresa Ruiz Cantero Universidad de Alicante
Elena Marbán Castro ISGlobal
Palmira Muñoz Muñoz Conselleria de Sanitat Universal i Salut Pública

ORGANIZED BY

COLLABORATORS



MEETING AT CIPF TO RENEW THE AGREEMENT BETWEEN CIPF AND CACSA. WITH FRANCESC COLOMER, DEBORAH BURKS, ENRIQUE VIDAL AND ENRIQUE FONTES



FLOW CYTOMETRY COURSE, TECHNICAL BASIS. COORDINATED BY ALICIA MARTÍNEZ AND JOSÉ ENRIQUE O'CONNOR. WITH THE PARTICIPATION OF GUADALUPE HERRERA AND BEATRIZ JÁVEGA. THIS COURSE IS CERTIFIED BY EVES AND THIS EDITION CELEBRATED BETWEEN THE 4TH AND THE 8TH OF OCTOBER WAS SPONSORED BY JANSSEN SPAIN.



SCIENTIFIC RETREAT, CIPF
PRINCIPAL INVESTIGATORS
MEETING CELEBRATED THE 24TH
OF NOVEMBER AT DRASSANES 52,
EL CABANYAL, VALENCIA.



MARIA JESUS VICENT AWARDED
BY PICANYA TOWN HALL WITH THE
SCIENTIFIC WOMEN PRIZE CONCEPCIÓN
ALEIXANDRE.



OPENING OF THE FUNDACIÓN
GENERAL CSIC EXHIBITION "A VIVIR
QUE SON 100 AÑOS". WITH ANA
BARCELO AND MAVI MESTRE.



VISITS TO THE FGCSIC EXHIBITION AT
CIPF "A VIVIR QUE SON 100 AÑOS"



THE 16TH OF SEPTEMBER WE CELEBRATED AT CIPF AN INFORMATIVE MEETING ABOUT THE CLINICAL TRIAL OF ADALIMUMAB FOR RP ADARET. DR. DAVID SALOM FROM HOSPITAL DE MANISES AND DR. REGINA RODRIGO FROM CIPF INFORMED PATIENTS ABOUT THIS TRIAL.



WE CELEBRATED THE INTERNATIONAL DAY OF SCIENTIFIC CULTURE THE 28TH OF SEPTEMBER AT THE MUSEU DE LES CIÈNCIES. CIPF AND THE MUSEU DE LES CIÈNCIES ORGANISED AND COORDINATED INTERACTIVE SCIENTIFIC WORKSHOPS ON THIS DAY. CIPF POLYMER THERAPEUTICS LABORATORY TEAM OFFERED IN THE MUSEUM TWO SURPRISING AND AMUSING ACTIVITIES AND EXPERIMENTS FOR YOUNG STUDENTS AND GENERAL PUBLIC.

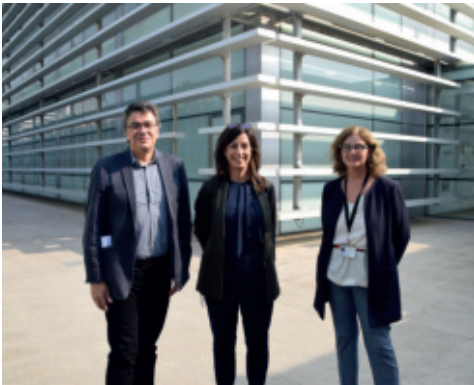


ON DECEMBER 16TH WE HOSTED AT CIPF THE III CONFERENCE ON PRECISION ONCOLOGY MANAGEMENT IN THE VALENCIAN COMMUNITY "ONE STEP CLOSER TO EQUITY".

PRESENTED BY CARLOS CAMPS, ANA LLUCH AND DEBORAH BURKS. THE INAUGURATION OF THE CONFERENCE WAS CONDUCTED BY AMPARO GARCÍA LAYUNTA FROM CONSELLERIA DE SANITAT UNIVERSAL I SALUT PÚBLICA.



OCTOBER 1ST INTERNATIONAL DAY OF OLDER PERSONS CONFERENCE AT CIPF WITH DEBORAH BURKS, ALVARO BONET, M^a AMPARO GARCÍA LAYUNTA, SACRAMENTO PINAZO, FERNANDO FLORES, ISABEL DEL PINO, AMPARO OLIVER, ÁNGEL BARCO, CAROLINA MIR, TERESA MIRALLES, ROSA MARTÍNEZ, MIREIA LÓPEZ AND PILAR HUERTA.



THE 19TH OF NOVEMBER CIPF ORGANISED AN EVENT IN MEMORY OF JERÓNIMO FORTEZA BOVER. WITH HIS FAMILY AND FRIENDS AND WITH THE PARTICIPATION OF CARLOS CAMPS, JUAN SAUS AND SANTIAGO RAMÓN Y CAJAL. CIPF CONFERENCE ROOM IS CALLED SINCE THIS DAY JERÓNIMO FORTEZA CONFERENCE ROOM IN HIS HONOR.



Press releases

HEALTH RESEARCH FOUNDATIONS PARTICIPATE IN A PREDICTIVE MEDICINE AND DATA SCIENCE PROJECT WITH MORE THAN 100 INSTITUTIONS

METABOLIC ALTERATIONS IN RED BLOOD CELLS ASSOCIATED WITH AGING

VALENCIAN BIOMEDICAL RESEARCH FOUNDATIONS CREATE THE ANA LLUCH GRANT TO PROMOTE TRANSLATIONAL RESEARCH IN ONCOLOGY

BARCELÓ: "THERE ARE MANY FACTORS THAT INFLUENCE HOW WE AGE AND WE CAN PARTICIPATE ACTIVELY"

THE CIPF PARTICIPATES IN A EUROPEAN PROJECT THAT STUDIES A BIOHYBRID IMPLANT TO REGENERATE THE SPINAL CORD

NEW PHARMACOLOGICAL THERAPIES TO REDUCE RETINAL DEGENERATION ARE INVESTIGATED

A TREATMENT FOR ALZHEIMER'S BASED ON POLYPEPTIDE NANOCONJUGATES IS SUCCESSFULLY TESTED IN ANIMALS

A TEAM FROM CIPF AND CH NAVARRA IDENTIFIES A NEW FORM OF NON-PROGRESSIVE CONGENITAL ATAXIA

THE CIPF INVESTIGATES THE MOLECULAR BASES OF DIFFERENT TYPES OF CANCER, NEW TARGETED THERAPIES AND ADVANCED DIAGNOSTIC TOOLS

CIPF RESEARCHERS ADVANCE IN A PRECLINICAL MODEL OF SCHIZOPHRENIA

THE CIPF LEADS A EUROPEAN COST ACTION TO DEVELOP NEW THERAPIES BASED ON THE REGULATION OF PROTEIN LEVELS

THE CIPF AND THE UNIVERSITY OF CAMBRIDGE SIGN A COLLABORATION AGREEMENT TO INVESTIGATE NEW THERAPIES IN DIABETES AND ASSOCIATED COMPLICATIONS

A TEAM FROM THE CIPF AND THE UPV TESTS A BIOCOMPOSITE FOR ACUTE SPINAL CORD INJURIES

RESEARCHERS DETECT 15 GENES EXPRESSED DIFFERENTLY IN MEN AND WOMEN WITH PARKINSON'S

NEW LUNG CANCER XENOGRAFT MODELS

RESEARCHERS IMPROVE SUSTAINED RELEASE AND REDUCE HARMFUL SIDE EFFECTS IN PROSTATE CANCER TREATMENT

A MULTIDISCIPLINARY TEAM FROM CIPF HAS IDENTIFIED COMMON UNDERLYING PATTERNS IN BREAST, KIDNEY AND LUNG CANCERS

A CIPF TEAM ADVANCES IN THE KNOWLEDGE OF THE RECEPTORS INVOLVED IN NEUROINFLAMMATION, NEURODEGENERATION AND BRAIN DAMAGE DUE TO ALCOHOLISM

THE CIPF RESEARCHER, M.ª JESÚS VICENT, WINS THE CONCEPCIÓN ALEIXANDRE AWARD FOR THE VALENCIAN SCIENTIFIC WOMAN OF PICANYA

CIPF DEVELOPS A NEW MODEL OF DRAVET SYNDROME IN DROSOPHILA FLY

RESEARCHERS REVEAL THAT ERBB4 DEFICIENCY CAUSES BEHAVIOURAL DEFICITS AND AFFECTS MEMORY

A TEAM FROM CIPF AND FISABIO DEVELOPS A TOOL THAT IMPROVES THE INTERPRETATION OF SPINAL CORD MRIS

METAFUN: META-ANALYSIS OF FUNCTIONAL MECHANISMS OF DISEASE

News Highlights

The CIPF and the UPV investigate Dravet syndrome with Drosophila flies
30/12/2021 **AlicantePress**

Researchers investigate a rare childhood disease with a genetically modified fly model
30/12/2021 **Infosalus**

The CIPF and the UPV investigate a pediatric rare disease with a genetically modified fly model
30/12/2021 **Europa Press Comunitat Valenciana**

The Spanish Association Against Cancer of Valencia committed to young talent to develop new treatments for lung and breast cancer
30/12/2021 **PharmaMarket**

Four projects to fight cancer
28/12/2021 **Las Provincias**

The AECC allocates €352,000 to scientific projects to improve the response to lung and breast cancer treatment
27/12/2021 **Europa Press Comunitat Valenciana**

The AECC allocates €352,000 to scientific projects to improve the response to lung and breast cancer treatment
27/12/2021 **20minutos**

A step closer to equity in oncology
20/12/2021 **Gaceta Médica**

Innovation at home. Interview to Maria Jesús Vicent
01/12/2021 **Saó**

CIPF leads a European COST Action to develop therapies based on the regulation of protein levels
25/11/2021 **Europa Press Comunitat Valenciana**

CIPF and the University of Cambridge will develop new therapies for diabetes and its associated complications
18/11/2021 **Infodiabético**

The CIPF and Cambridge University collaborate in the investigation of new therapies in diabetes and associated complications
16/11/2021 **Europa Press Comunitat Valenciana**

Description of Hereditary Retinal Dystrophies, Regina Rodrigo
04/11/2021 **RadioLibertad FM**

Adaret clinical trial: researchers test whether a new drug is effective against retinosis pigmentary
28/10/2021 **Visión Num. 59**

Debate on new ways to end pancreatic cancer
27/10/2021 **La Razón**

Pancreatic cancer, new treatments for the most lethal cancer
22/10/2021 **La Vanguardia**

Researchers identify a mechanism that controls the onset of puberty
18/10/2021 **Genotipia**

Spanish researchers identify 'the switch' of sexual maturation
15/10/2021 **Alimente+Salud El Confidencial**

Inflammation and oxidation, possible targets to delay retinal degeneration

14/10/2021 **Diario Médico**

Researchers investigate new pharmacological therapies to reduce retinal degeneration

27/09/2021 **Infosalus**

CIPF and the City of Arts and Sciences celebrate the Day of Scientific Culture

27/09/2021 **Las Provincias**

Erwin Knecht—the intelligent and mad, funny and grumpy man of autophagy

23/09/2021 **Autophagy, Taylor&Francis Online**

Scientists find molecular changes linked to schizophrenia

17/08/2021 **Diario Sanitario**

Advances in the mechanisms involved in the development of schizophrenia

16/08/2021 **Agencia EFE**

Researchers find molecular alterations involved in the development of schizophrenia

16/08/2021 **ConSalud**

Researchers discover new alterations of cortical circuits related to schizophrenia

16/08/2021 **Diario Médico**

"Cancer will become a chronic and non-lethal disease"

31/07/2021 **El Mundo**

Dolors Corella, Marta Benet y M^a Jesús Vicent, premios Concepción Aleixandre a la Mujer Científica Valenciana

28/05/2021 **UV Noticias**

María Jesús Vicent Docón, Marta Benet Giménez and Dolors Corella, winners of the Picanya Valencian Scientific Woman Awards

27/05/2021 **HortaNoticias**

M^a Jesús Vicent Docón, head researcher of the CIPF, receives the Concepción Aleixandre de Picanya award

26/05/2021 **Comarcal CV**

Which factors influence alcohol addiction in adolescence?

18/05/2021 **CadenaSer**

European cooperation in a new project to regenerate the spinal cord

18/05/2021 **IMMédico**

Centro Príncipe Felipe participates in a European project to create a biohybrid implant that regenerates the spinal cord

17/05/2021 **Infosalus**

Fisabio's and CIPF researchers design an algorithm that anonymizes "sensitive" information in medical records

13/05/2021 **Europa Press Comunitat Valenciana**

Inauguration in Valencia of the exhibition "Live up to 100 years"

07/05/2021 **madrimasd**

Fundaluce Award Ceremony

06/05/2021 **Visión Num. 58**

A total of 27 Valencian Dual Vocational Training students selected for the Sanec health research program

19/04/2021 **Europa Press**

A total of 27 Valencian Dual Vocational Training students selected for the Sanec health research program

19/04/2021 **20 minutos**

New nanomedicine treatment for Alzheimer's successfully tested

15/04/2021 **Diario de Navarra**

Nanomedicine-based treatment for Alzheimer's successfully tested on animals

15/04/2021 **ConSalud**

Nanomedicine treatment for Alzheimer's successfully tested on animals

15/04/2021 **CadenaSer**

Nanomedicine treatment for Alzheimer's successfully tested on animals

15/04/2021 **LevanteEMV**

The head of microbiology of the clinical hospital of Valencia scientific coordinator of vaccination

18/03/2021 **La Vanguardia**

Covid-19 is likely to be with us for years to come

17/03/2021 **El Periódico de Aquí**

A research team in which the CIPF participates identifies a new form of non-progressive congenital ataxia

12/03/2021 **Diario de Navarra**

Bankia Foundation launches the SANEC call

02/03/2021 **Noticias Bancarias**

C. Valenciana creates ProVaVac to investigate and "improve the effectiveness" of vaccination against covid-19

01/03/2021 **DiarioFarma**

Open the SANEC call to promote medical research in Dual Vocational Training students

01/03/2021 **Éxito Educativo**

The Generalitat creates a research program on vaccination to improve its effectiveness

01/03/2021 **ValenciaPlaza**

Women scientists: when breaking the "glass ceiling" is not a utopia

11/02/2021 **Cevipyme**

The Valencian biomedical research foundations create the Ana Lluch scholarship for Oncology

11/02/2021 **Saforguia.com**

Valencian biomedical research foundations create the Ana Lluch scholarship

10/02/2021 **La Vanguardia**

Impact of the COVID19 pandemic on women scientists in biomedical research

01/02/2021 **11defebrero.org**

Health research foundations participate in a Predictive Medicine and Data Science project with more than 100 institutions

07/01/2021 **El Periódic**

La AECC destina 352.000 € a proyectos científicos para mejorar la respuesta al tratamiento de cáncer de pulmón y mama



La Asociación Española Contra el Cáncer (AECC) destina 352.000 euros a proyectos científicos para mejorar la respuesta al tratamiento de cáncer de pulmón y mama.

Los proyectos científicos de la AECC se centran en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. Los proyectos científicos de la AECC se centran en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Centro Príncipe Felipe participa en un proyecto europeo para crear un implante biohíbrido que regenere la médula espinal



El Centro Príncipe Felipe participa en un proyecto europeo para crear un implante biohíbrido que regenere la médula espinal.

El proyecto europeo se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El proyecto europeo se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

La Ciudad de las Artes y las Ciencias celebra el Día de la Cultura Científica con talleres gratuitos el próximo 28 de septiembre



La Ciudad de las Artes y las Ciencias celebra el Día de la Cultura Científica con talleres gratuitos el próximo 28 de septiembre.

El evento se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El evento se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

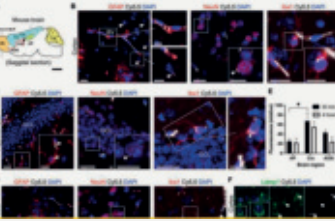
Prueban con éxito en animales un tratamiento para el Alzheimer basado en la Nanomedicina



Prueban con éxito en animales un tratamiento para el Alzheimer basado en la Nanomedicina.

El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Prueban con éxito en animales un tratamiento de nanomedicina para el Alzheimer



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El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Encuentran alteraciones moleculares implicadas en el desarrollo de la esquizofrenia



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Las fundaciones de investigación biomédica valencianas crean la Red AlzChall para impulsar la investigación biomédica en Alzheimer



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El CIPF y Cambridge colaborarán en la investigación de nuevas terapias en diabetes y complicaciones asociadas



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El CIPF lidera una acción europea para desarrollar terapias basadas en la regulación de los niveles de proteínas



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“Es probable que el covid-19 siga entre nosotros los próximos años”



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El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Inflamación y oxidación, posibles dianas para retrasar la degeneración de retina



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El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

El CIPF y la UPV investigan una enfermedad rara infantil con un modelo de mosca modificado genéticamente



El CIPF y la UPV investigan una enfermedad rara infantil con un modelo de mosca modificado genéticamente.

El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

La Ciudad de las Artes y las Ciencias celebra el Día de la Cultura Científica



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Prueban con éxito un tratamiento de nanomedicina para el Alzheimer



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El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Avanzan en los mecanismos implicados en el desarrollo de la esquizofrenia



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C. Valenciana crea ProVaVac para investigar y “mejorar la efectividad” de la vacunación frente al covid-19



C. Valenciana crea ProVaVac para investigar y “mejorar la efectividad” de la vacunación frente al covid-19.

El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

El CIPF y la UPV investigan con moscas el síndrome de Dravet



El CIPF y la UPV investigan con moscas el síndrome de Dravet.

El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

“El cáncer se convertirá en una enfermedad crónica y no letal”



“El cáncer se convertirá en una enfermedad crónica y no letal”.

El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes. El estudio se centra en el desarrollo de nuevas terapias y en la mejora de la calidad de vida de los pacientes.

Avanzan en los mecanismos implicados en el desarrollo de la esquizofrenia

En gran medida, los investigadores del Proyecto Felpa (CIPF) se centran en identificar alteraciones a nivel molecular y celular de los circuitos cerebrales que se producen en el desarrollo y contribuyen a desarrollar los síntomas de la esquizofrenia.

El equipo del CIPF liderado por Felipe Picayo, ha desarrollado un modelo de investigación que reduce la complejidad de la genética de la esquizofrenia a un nivel más manejable, un nivel adecuado con múltiples alteraciones humanas en el código, lo que permite estudiar la enfermedad y sus mecanismos.

El modelo se aplica al CIPF, que utiliza su plataforma de biología de sistemas para estudiar las conexiones de la esquizofrenia y determinar para cada caso los cambios de la genética de la enfermedad y cómo influyen en el desarrollo.

Además, están trabajando en la creación de un "perfil" de la enfermedad y su desarrollo y funcionamiento de la red neuronal.

Cooperación europea en un nuevo proyecto para regenerar la médula espinal

El Centro de Investigación Príncipe Felipe se ha sumado al equipo que estudia un implante bioactivo para regenerar la médula espinal.



Cáncer de páncreas, nuevos tratamientos para el cáncer más mortal

El próximo 27 de octubre, la Fundación "la Caixa" ofrecerá un debate online entre dos prestigiosas investigadoras de nuestro país, la Dra. María Abad y la Dra. María J. Vicent, en el que se abordará qué está haciendo la ciencia para luchar de forma efectiva contra el cáncer con mayor letalidad.



Personal investigador de Fisabio diseña un algoritmo que anonimiza la información "sensible" de los expedientes médicos



Un equipo de la Unidad Mixta de Investigación Biomédica de la Fundación para el Fomento de la Investigación Científica y Tecnológica del Centro de Investigación Príncipe Felipe (CIPF) ha desarrollado una herramienta que permite anonimizar datos médicos para que puedan ser usados por investigadores sin riesgo de pérdida de datos.

Investigan nuevas terapias farmacológicas para disminuir la degeneración de retina



El equipo de Investigación Príncipe Felipe de Retina (CIPF-R) ha desarrollado una nueva herramienta que permite estudiar la degeneración de la retina.

Fundaciones de investigación biomédica valencianas crean la beca Ana Lluch

Las fundaciones de investigación biomédica valencianas han creado la beca Ana Lluch para apoyar a investigadores jóvenes.

María Jesús Vicent Docón, Marta Benet Giménez y Dolors Corella, ganadoras de los Premios Dona Científica Valenciana de Picanya



El Ayuntamiento de Picanya entregará este viernes 28 de mayo, coincidiendo con el Día Internacional de Acción por la Salud de los Niños, los Premios Concepción Aleixandre a la Dona Científica Valenciana.

Nueva terapia del centro Príncipe Felipe para el cáncer de mama triple negativo



Investigadores del centro Príncipe Felipe se centran en desarrollar nuevas terapias para el cáncer de mama triple negativo.

Las Provincias

Cuatro proyectos destinados a combatir el cáncer

La delegación en Valencia de la asociación concede ayudas a iniciativas pioneras de jóvenes científicos.

Improving the interpretation of spinal cord magnetic resonance images



Un equipo de investigadores del Centro de Investigación Príncipe Felipe (CIPF) ha desarrollado un algoritmo que mejora la interpretación de imágenes de resonancia magnética de la columna vertebral.

La Asociación Española Contra el Cáncer de Valencia apuesta por el talento joven para desarrollar nuevos tratamientos de cáncer de pulmón y mama



La Asociación Española Contra el Cáncer de Valencia apuesta por el talento joven para desarrollar nuevos tratamientos de cáncer de pulmón y mama.

ivoox

Distrofias Hereditarias Retinianas - Dra. Regina Rodrigo

Descripción de Distrofias Hereditarias Retinianas - Dra. Regina Rodrigo

Mería Jesús Vicent Docón, Marta Benet Giménez y Dolors Corella, ganadoras de los Premios Dona Científica Valenciana de Picanya



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comarcacv

Mª Jesús Vicent Docón, investigadora jefa del CIPF, recibe el premio Concepción Aleixandre de Picanya



Entrega del premio Fundaluce 2019



La doctora Dunja Lukovic recibió el pasado enero la ayuda a la investigación 2019 en Distrofias Hereditarias de Retina, otorgada por la Fundación Lucha Contra la Ceguera (FUNDALUCE). A la izquierda la doctora Lukovic, en el centro Almudena Araya Rubio (Presidenta de FUNDALUCE), y a la derecha, la doctora Deborah J. Burke.

Las nuevas vías para acabar con el cáncer de páncreas, a debate



La Presidenta "la Caixa" ofrecerá un debate online entre dos prestigiosas investigadoras de nuestro país, la Dra. María Abad y la Dra. María J. Vicent, en el que se abordará qué está haciendo la ciencia para luchar de forma efectiva contra el cáncer con mayor letalidad.

diario farma

C. Valenciana crea ProVaVac para investigar y "mejorar la efectividad" de la vacunación frente al covid-19



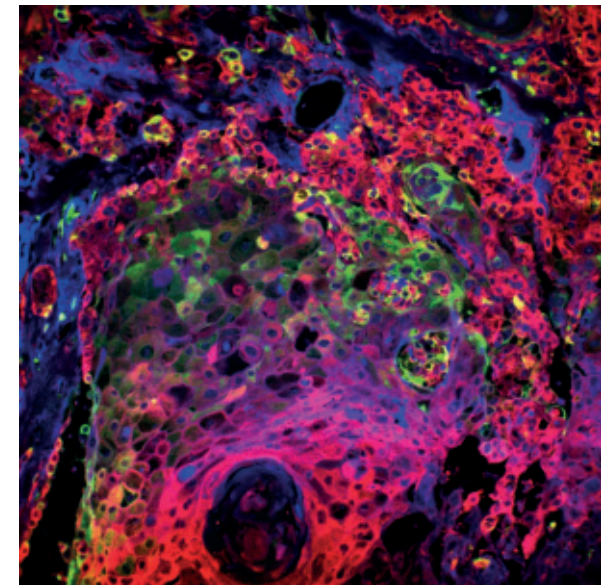
Ensayo clínico Adaret

Prueban si un nuevo fármaco es eficaz contra la retinitis pigmentaria



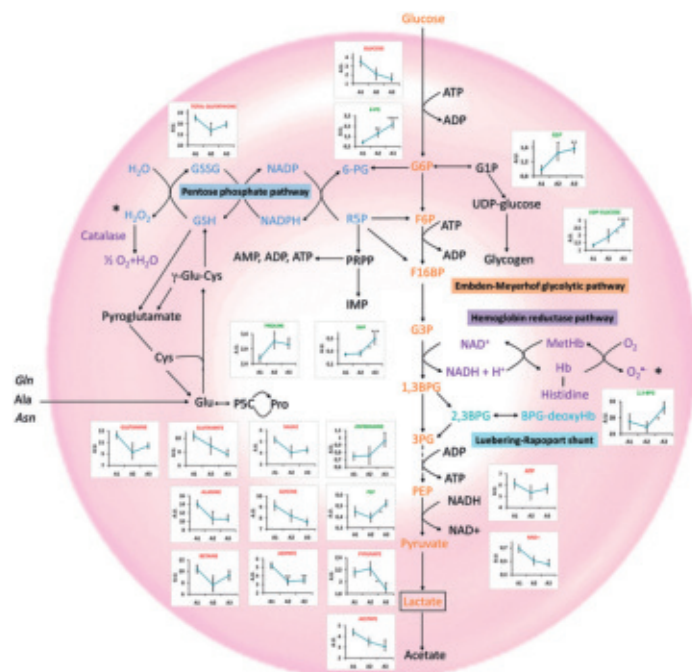
La doctora Dunja Lukovic recibió el pasado enero la ayuda a la investigación 2019 en Distrofias Hereditarias de Retina, otorgada por la Fundación Lucha Contra la Ceguera (FUNDALUCE). A la izquierda la doctora Lukovic, en el centro Almudena Araya Rubio (Presidenta de FUNDALUCE), y a la derecha, la doctora Deborah J. Burke.

T E C H N O L O G Y



T E C H N O L O G Y

Martina Palomino- Schätzlein



The Nuclear Magnetic Resonance (NMR) Unit provides advanced applications for the identification, characterisation, and quantification of small molecules and macromolecules, offering tools to elucidate the molecular mechanisms underlying their biological activity. The Unit offers access to three NMR spectrometers with different field strengths (300, 500, and 600 MHz), equipped with a variety of probes and automation systems, including a probe for intact tissue analysis (HRMAS), a cold probe with enhanced sensitivity, and a SampleJet robot system for up to 500 samples. As support to its users, the Unit offers its extensive experience to help in the interpretation of NMR spectra and the characterisation and structural analysis of different chemical compounds and macromolecules.

Furthermore, the Unit can perform metabolic profiling of a broad range of biofluid samples, including plasma, serum, urine, amniotic fluid, cerebrospinal fluid, or tear fluid. The quantification of metabolites in different tissue and organ samples from patients and model animals, as well as in cellular models, can also be carried out. As a result, NMR technology has been applied to study the alterations of the metabolic profiles associated with different biochemical, pharmacological, or pathological process, including cancer, diabetes, Alzheimer, or rare diseases. The Unit has worked in close partnership with research groups and hospitals on several of these projects. On the other hand, the NMR Unit also provides its equipment and experience for screening drug libraries to search for hits for specific protein targets, as well as to characterise the geometry of the interaction between drug molecules and protein or RNA macromolecules.

The NMR Unit has developed a protocol for the determination of the metabolic profile in mitochondria and nuclei of tissues or cultures cells, in collaboration with the Polymer Therapeutics Research Group. This methodology can be applied to tissue samples obtained from animal models or human biopsies, and could provide very useful information in biomedical projects or clinical studies focused on the evaluation of new drugs (e.g., efficacy, toxicity, etc.), particularly those ones targeting mitochondria or nuclei.

Juarez-Carreño S, Vallejo DM, Carranza-Valencia J, Palomino-Schätzlein M, Ramon-Cañellas P, Santoro R, de Hartog E, Ferres-Marco D, Romero A, Peterson HP, Ballesta-Illan E, Pineda-Lucena A, Dominguez M, Morante J. Body-fat sensor triggers ribosome maturation in the steroidogenic gland to initiate sexual maturation in *Drosophila*. *Cell Rep.* 2021 Oct 12;37(2):109830. doi: 10.1016/j.celrep.2021.109830. PMID: 34644570.

Neira JL, Palomino-Schätzlein M, Hurtado-Gómez E, Ortore MG, Falcó A. An N-terminal half fragment of the histidine phosphocarrier protein, HPr, is disordered but binds to HPr partners and shows antibacterial properties. *Biochim Biophys Acta Gen Subj*. 2021 Dec;1865(12):130015. doi: 10.1016/j.bbagen.2021.130015. Epub 2021 Sep 17. PMID: 34537288.

Gómez-Archila LG, Palomino-Schätzlein M, Zapata-Builes W, Galeano E. Development of an optimized method for processing peripheral blood mononuclear cells for 1H-nuclear magnetic resonance-based metabolomic profiling. *PLoS One*. 2021 Feb 25;16(2):e0247668. doi: 10.1371/journal.pone.0247668. PMID: 33630921; PMCID: PMC7906414.

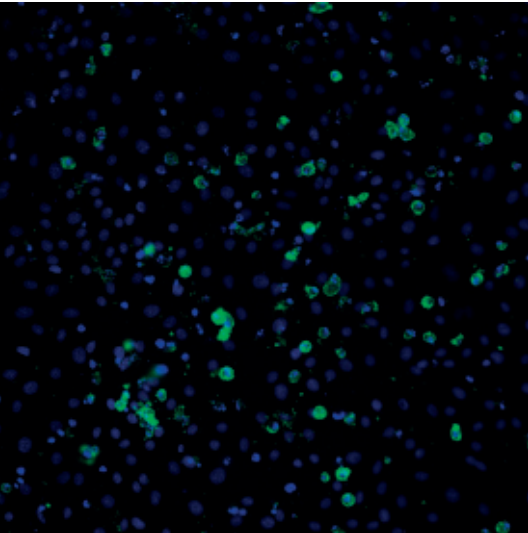
TECHNOLOGY

FLOW
CYTOMETRY
AND CYTOMICS

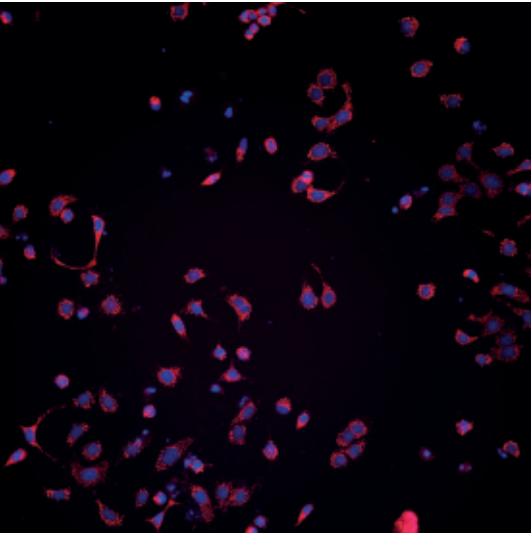
TEAM MEMBERS

Alicia Martínez-Romero and Domingo Gil Casanova

Cells treated with camptotecin for 6 hours. Hoechst 33342 and Annexin V FITC is performed to detect total nuclei with Hoechst 33342, and to quantify apoptotic cells as Annexin V + cells. Samples acquired in the InCell Analyzer 2200 (Molecular Devices, USA).



Cells stained with Hoechst 33342 for nuclei and MitoTracker Deep Red to visualize the mitochondria. Samples acquired in the InCell Analyzer 2200 (Molecular Devices, USA).



OVERVIEW

The CIPF Cytomics Facility provides technological solutions for high-speed polychromatic analysis, fluorescence activated cell sorting, and high-content screening assays. It offers high-quality experimental support applied to biomedicine, biotechnology, translational medicine, microbiology, and environmental sciences.

During 2021 we have collaborated with the CIPF research labs, CIPF collaborators and another external groups. A Final Degree Project and a PhD Thesis were the result of this collaboration. Final Degree Project: Development of an experimental model for in vitro drug research based on cell painting assays, Biotechnology UPV, ETSIAMN UPV by Alicia Ibáñez de las Heras, with Alicia Martínez Romero as tutor. PhD Thesis: Characterization of immune and platelet function in marine mammals and their alterations induced by stress, pathologies or environmental contaminants, by Mar Felipe Benavent, University of Valencia, directed by José Enrique O’connor Blasco, Alicia Martínez Romero and Consuelo Rubio Guerri. Antonio Iradi Casal was the UV tutor.

Moreover, the course “Flow Cytometry: Technical Bases”, accredited by the Comisión de Formación Continuada de las Profesiones Sanitarias, was celebrated in October 2021. The Cytomics Core Facility also have participated in the University Certificate in Flow Cytometry: Fundamentals, Techniques and Applications, 1st Edition, Virtual Course University of Valencia, January-March 2021 (Online).

SELECTED ARTICLES

Portuondo; Damiana Téllez Martínez; Gladys Olivera; Manuel Fernández Delgado; Beatriz Jávega; Guadalupe Herrera; Alicia Martínez; Paulo Inacio Costa; Iracilda Zeppone Carlos; Salvador Francisco Aliño. "Foxp3 Silencing with Antisense Oligonucleotide Improves Immunogenicity of an Adjuvanted Recombinant Vaccine against Sporothrix schenckii". International Journal of Molecular Sciences. 22 - 7, pp. 3470 - 3483. Basel(Suiza): MDPI, Basel, Switzerland., 27/03/2021. ISSN 1422-0067.

Faria Khan; Karina Kwapiszewska; Yue Zhang; Yuzhi Chen; Andrew T. Lambe; Agata Kołodziejczyk; Nasir Jalal; Krzysztof Rudzinski; Alicia Martínez Romero; Rebecca C. Fry; Jason D. Surratt; Rafal Szmigielski. "Toxicological Responses of alpha-Pinene-Derived Secondary Organic Aerosol and Its Molecular Tracers in Human Lung Cell Lines". Chemical Research in toxicology. 34 - 3, pp. 817 - 832. (Estados Unidos de América): ACS Publications, 02/03/2021. ISSN 15205010.

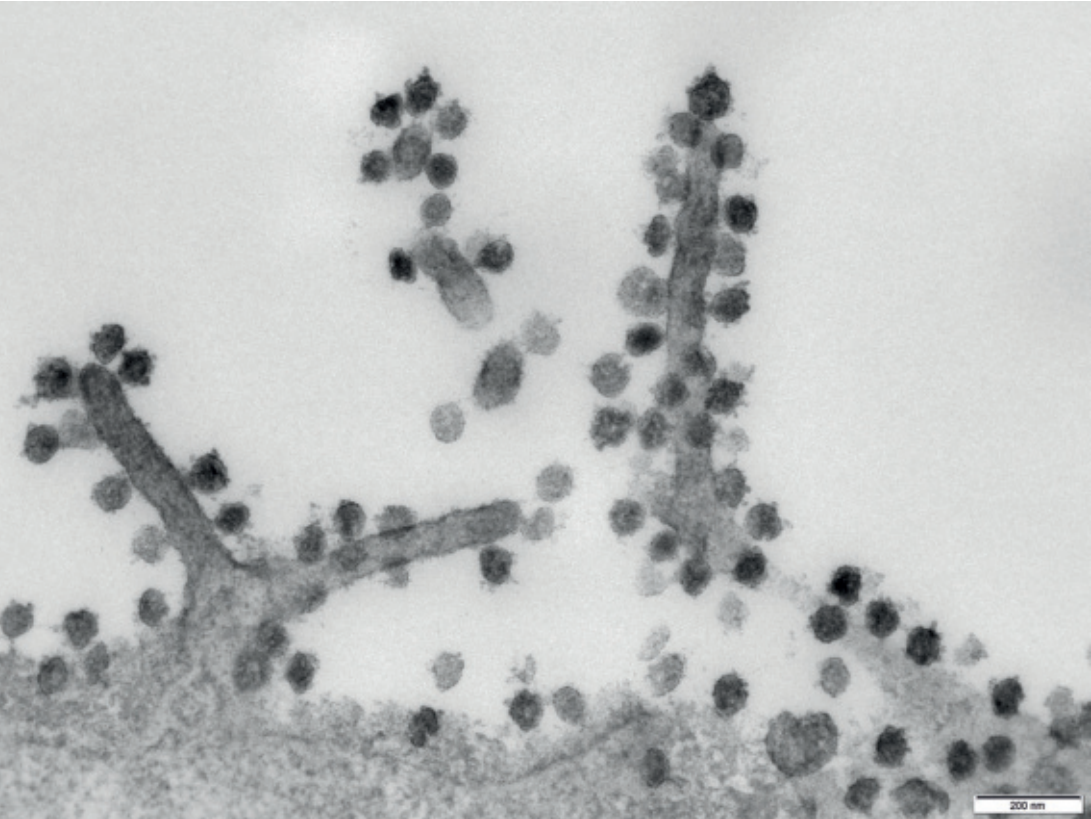
TECHNOLOGY

TRANSMISSION ELECTRON MICROSCOPY

UNIT MEMBERS

Mario Soriano Navarro

SARS CoV-2 virus attached to the surface and small expansions of a cell culture.



OVERVIEW

Electron microscopy uses an accelerated electron beam which, upon impacting the sample, generates different signals that provide information about its atomic structure. In Transmission Electron Microscopy (TEM), transmitted electrons are detected to generate conventional, dark-field, high-resolution transmission images. Due to its high resolution power, TEM allows the development of useful applications in the fields of biomedical research, biotechnology and diagnostics.

The Electron Microscopy Core Facility at CIPF collaborates with internal and external research groups offering an invaluable tool to address some scientific questions. The Unit provides technological support for many electron microscopy techniques: ultrastructural studies of tissues and cell cultures, negative staining of viruses and extracellular vesicles, some immunogold techniques and CryoTEM.

One of the most demanded techniques is the processing of extracellular vesicles and exosomes. Due to their size and composition, electron microscopy is one of the main tools that allow the morphological characterization of these particles. A remarkable technique is the detection of surface markers on the external membrane of extracellular vesicles by immunogold.

Also, in the line of developing new techniques, we are working jointly with the Advanced Light Microscopy Unit on the implementation of Correlative Light and Electron microscopy techniques (CLEM). We have developed correlation techniques in both cell culture and histological tissues.

In 2021, the large volume of samples processed from different national and international institutions has been highlighted. In addition to the service offered as a core facility, efforts are being made to exploit the knowledge of the technical staff in the field of research, for which scientific collaborations have been initiated with some research group. These collaborations cover both conventional electron microscopy and CLEM techniques.

The facility has not been oblivious to the pandemic we are experiencing and has tried to contribute knowledge to the fight against the Sars-Cov-2 virus. We have processed cell culture samples infected with the virus to study the mechanism of infection in the cells and in which cell compartments it establishes itself.

SELECTED ARTICLES

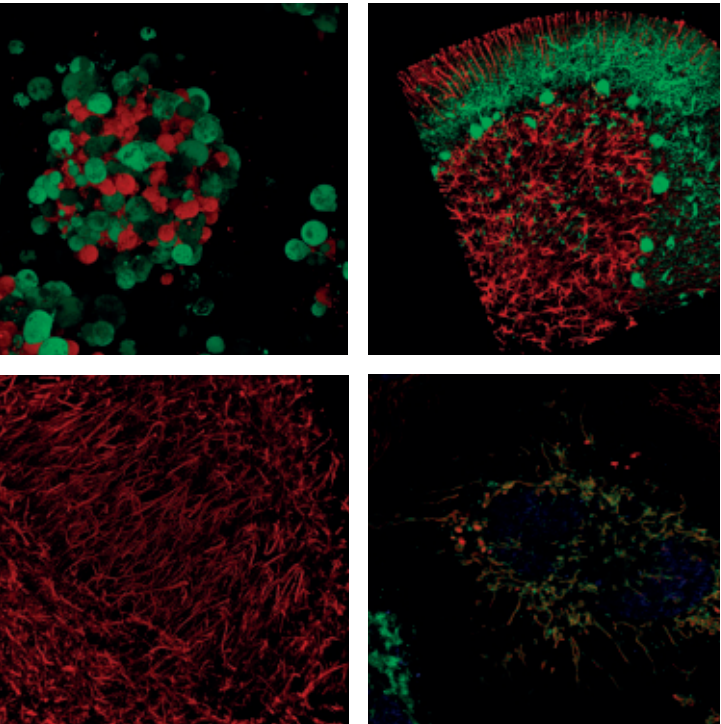
Optimizing a platelet-rich plasma concentration protocol for south American sea lions (*Otaria flavescens*). Morón-Elorza P, Rojo-Solís C, Soriano-Navarro M, Álvaro-Álvarez T, Valls-Torres M, García-Párraga D. J Zoo Wildl Med. 2021 Sep;52(3):956-965. doi: 10.1638/2020-0204.

TECHNOLOGY

ADVANCED
LIGHT
MICROSCOPY

UNIT MEMBERS

Alberto Hernández Cano



OVERVIEW

The Advanced Light Microscopy Facility (ALMF) is located in more than 100 square meters of space where the CIPF offers efficient access to a wide variety of microscopes for users, from conventional to state-of-the-art light microscopy equipment. The ALMF assists CIPF users and also external users in their research with key techniques and tools in the field of biomedical research (for live cells, fixed samples, model organisms, small animals or at most points in between) and also in other scientific areas such as nanoscience and nanotechnology, new materials, etc.

The facility is currently equipped with three laser scanning confocal microscopes, a multiphoton/intravital microscope, a wide-field fluorescence microscope with structured illumination (pseudo confocal microscope), five wide-field fluorescence microscopes, a slide scanner for whole slide imaging and a PALM laser microdissection system for non-contact sample cutting and capture. Live cell imaging can be performed at two workstations surrounded by environmental chambers to maintain constant temperature and CO₂ levels. An offline workstation can be used for image processing, visualization and user data analysis. In addition, the ALMF provides user training and ongoing support, including assistance with experimental design, visualization and image processing, and quantitative analysis.

Despite the pandemic situation, 2021 has been a year with a great scientific activity for the ALMF. Our equipment has been used by more than 60 users from more than 20 laboratories with a total of more than 9000 hours of use.

The evaluation of biological tissues in three dimensions is becoming increasingly popular. This trend coincides with the emergence of a wide variety of tissue clearing protocols and advances in two-photon microscopy. In 2021, we started combining both techniques, and have obtained excellent results that have provided us with more structural information than traditional optical sectioning.

On the other hand, in 2021, the ALMF, working closely with the electron microscopy service of the CIPF, has optimized and improved the CLEM technique by introducing the use of the laser microdissector. We have achieved that the technique is perfectly protocolized and we are currently collaborating in some research projects implementing this technique.

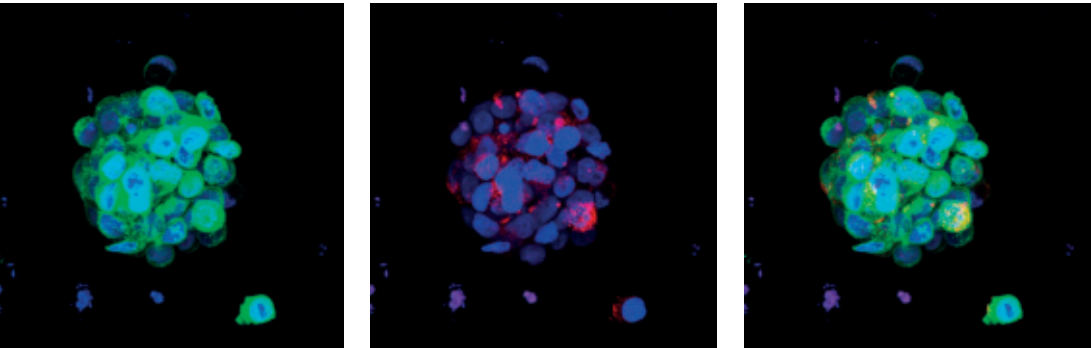
TECHNOLOGY

SCREENING
FACILITY
AT CIPF

TEAM MEMBERS

Scientist in Charge: Maria J. Vicent.
Technician in Charge: Esther Masía.
ERIC-EU-OpenScreen Specialist Site CIPF also with Dr. Mar Orzáez
and David Charbonnier.

Endoplasmic Reticulum/CD63 modulation.



OVERVIEW

The CIPF Screening Platform supports the evaluation of biological and pharmacological compound libraries, including in-house libraries and those from external agencies (e.g. EU-OpenScreen). CIPF Screening facility is an accredited specialist site on complex cellular assays with the ERIC EU-OpenScreen. We aim to identify and characterize novel bioactive agents for cancer treatment, regenerative medicine, and infectious diseases, among other conditions.

We have validated an HTS approach to identifying exosome biogenesis/release inhibitors by AlphaScreen™, which may improve diagnostic and therapeutic approaches in cancer, neuroinflammation, and many other diseases. Cancer research represents a crucial area; to this end, we have performed screenings that compare traditional 2D with advanced 3D breast cancer cell models and developed combination assays for various cancer types, including sarcoma, to develop personalized treatment approaches. We also undertook massive differential screening to detect drugs that induce breast cancer cell death through Gasdermin B.

Thanks to a European project (H2020-DRIVE) coordinated by EU-OpenScreen, we successfully conducted a massive screening of 100,000 compounds, which accelerated the development of an associated MedChem project. Other platform-involved projects include neurodegenerative diseases (e.g., Parkinson's disease) and infectious diseases such as SARS-COV-2; the latter includes an optimization for a high-density assay to identify drug-RNA (virus) interaction.

Finally, we collaborate broadly with the CIPF Cytomics and Advanced Light Microscopy services, where we are currently working towards implementing Cell Painting technology in 3D cell models.

The unit participates in: ERIC-EU-OpenScreen, SDDN, Geivex, and other networks of excellence such as REDEFAR, ES-OpenScreen and Tentacles.

SELECTED ARTICLES

Francisco José Sanz; Cristina Solana Manrique; José M. Torres; Esther Masía Sanchis; María J. Vicent Docon; Nuria Paricio. A high-throughput chemical screen in DJ-1 β mutant flies identifies zaprinast as a potential Parkinson's disease treatment. Neurotherapeutics. 2021. doi: 10.1007/s13311-021-01134-2.

Esther Masía Sanchis; Inma Conejos Sanchez; María J. Vicent Docon. "Treating Neurodegeneration with Synergistic Combinations of Polypeptide-Based Nanoconjugates Targeting Oxidative Stress and Inflammation." Poster presentation. SDDN congress 2021. Madrid, Nov 2021.

Esther Masía Sanchis; Zoraida Andreu; David Charbonnier; María J. Vicent Docon. "Identification of Synergistic Drug Combinations by 3D Breast Cancer Spheroid-based Screening". SLAS EUROPE 2021, Virtual meeting.

Silvestri A., Vicente F, Vicent M.J., Stechmann B., Fecke W. Academic collaborative models fostering the translation of physiological in vitro systems from basic research into drug discovery. Drug Discovery Today 2021. <https://doi.org/10.1016/j.drudis.2021.02.024>

TECHNOLOGY

GENOMICS AND
TRANSLATIONAL
GENETICS

TEAM MEMBERS

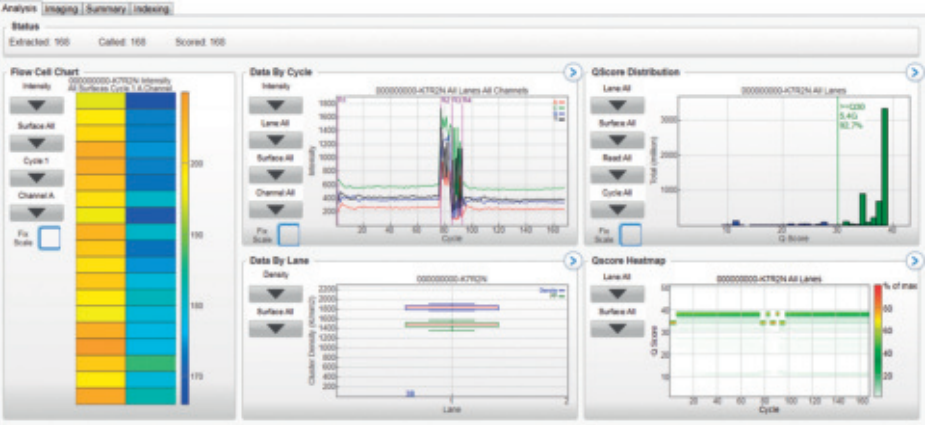
Laura Ramírez Jiménez, Eloisa Barber Cano

OVERVIEW

Our main objective is to provide support and scientific advice to the different research groups, whether they are CIPF or external institutions; hospitals, OPIs and companies. To achieve this goal, the service integrates the scientific advances of the CIPF with advanced technology equipment, in the fields of human genetics, genomics and bioinformatics, also enriched with the knowledge generated through different collaborative projects. We focus on helping all our users in their next generation sequencing (NGS), qPCR, Sanger and microarray experiments and, therefore, our services range from the extraction of nucleic acids from tissue, cell cultures or biological liquids until the delivery of the data analyzed using bioinformatics tools.

Some of the most used applications were targeted resequencing, RNAseq, small genome sequencing, metagenomics, targeted gene expression profiling, miRNAs, aCGH, differential expression, interindividual genetic variation, and epigenetic profiling, among others.

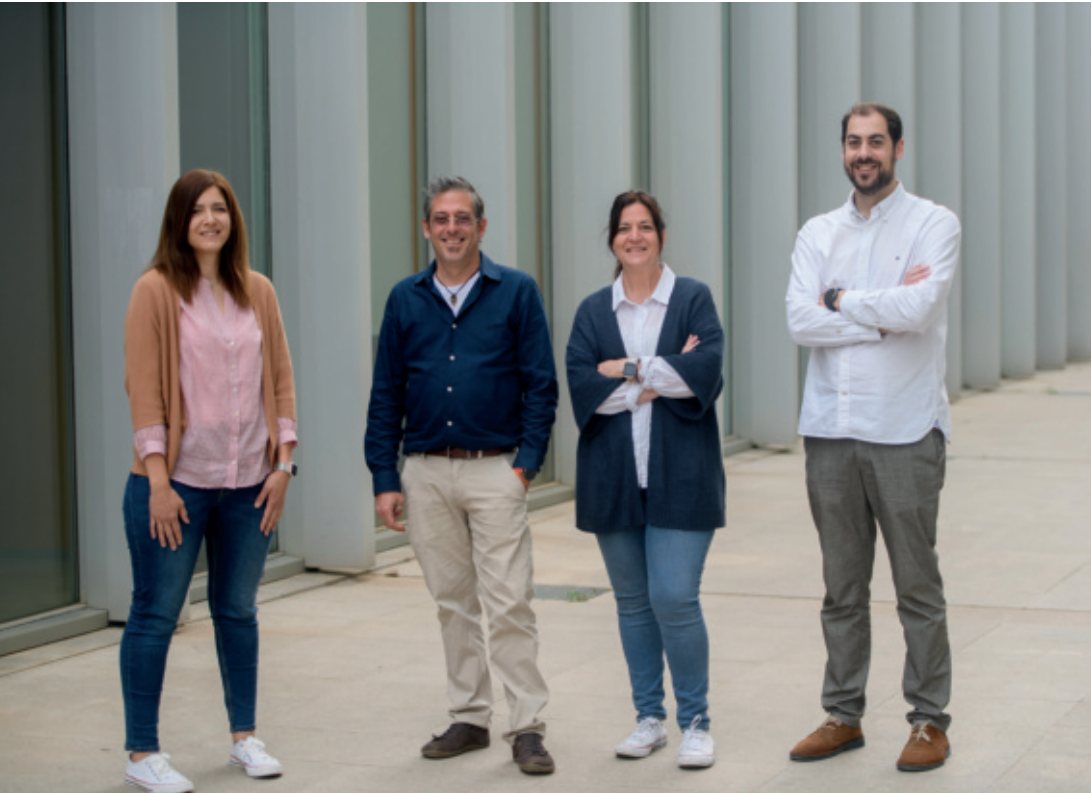
NGS-based gene panel in Sequencing Analysis Viewer.



ANIMAL MODELS PLATFORM

TEAM MEMBERS

Preclinical Models Platform Director: Víctor Gómez García
Tomás García Robles, Amparo Moragón Carretero,
Melisa Vera Abarca

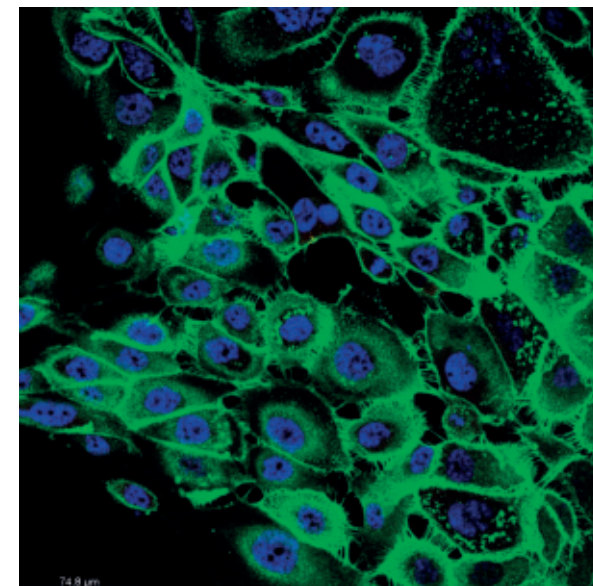


OVERVIEW

Advances in biomedical research often require the use of in vivo models and the consistency and reproducibility of data can only be achieved with high-quality standardised models, facilities, and procedures. At the CIPF, we are committed to the highest standard of animal welfare. The Animal Facility provides CIPF scientists with high-quality animal care services and facilities to improve animal research and ensure the health, well-being, and humane treatment of animals used in research and teaching.

Despite of the pandemic situation, the activity has been increasing during 2021. Some important changes have been done through the months securing a better service without losing any quality aspect of the service we provide to all our users. The Animal Models Platform has been up and running all year long making possible to keep the research animals housed in the department with the best standards of health, well-being and microbiological status.

Our skilled and experienced staff is always trying to find better ways to get better and implementing improvements which will be reflected even more in coming years results.



CIPF_ Economic Figures

FUNDS WITH A
COMPETITIVE ORIGIN

2.038.219 €

FUNDS WITH A
NON-COMPETITIVE ORIGIN

422.927 €

DIRECT FUNDS
FROM GENERALITAT VALENCIANA

4.714.000 €

CIPF_ Publications

AVERAGE IMPACT FACTOR

6,15

JCR PUBLICATIONS

122

1Q PUBLICATIONS

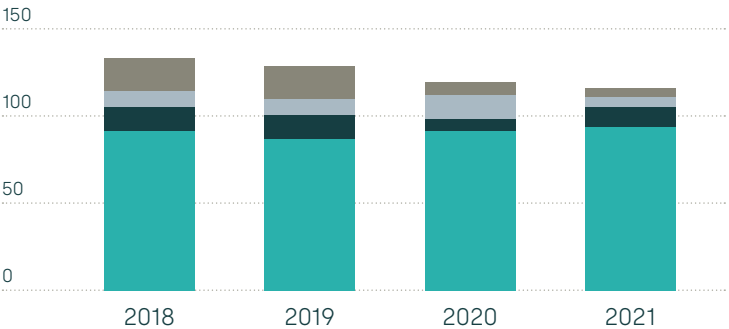
97

1Q

79%

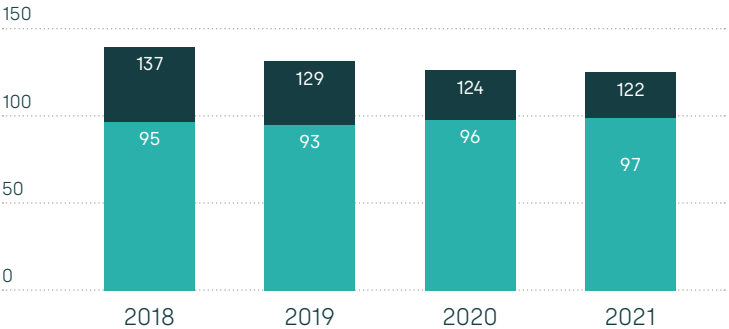
- Articles
- Reviews
- Ed. Mat.
- Meeting Abstract
- Letters

NUMBER OF PUBLICATIONS



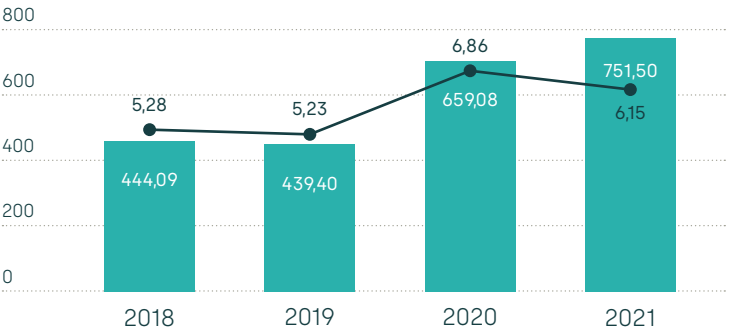
PUBLICATIONS IN 1ST QUARTILE

- Q1
- Total Publications



IMPACT FACTOR

- Impact Factor
- Mean IF



FACTS AND FIGURES

CIPF_ HUMAN RESOURCES

HRS4R

In 2021, the CIPF continued the Action Plan established to implement the European Commission's Human Resources Strategy for Researchers (HRS4R) to promote research careers in accordance with the principles established by the European Charter for Researchers and the Code of Conduct. Since April 2021, as part of our strategic plan and commitment to the HRS4R program, the CIPF is offering its staff the Nature Masterclasses Training in areas such as Scientific Writing and Publishing, Effective Collaboration in Research, Managing Research Data to Unlock its Full potential, Data Analysis planning, Peer Review and Grant Writing among other courses. These courses give our researchers the opportunity to learn techniques and strategies to develop their skills and confidence in a variety of essential research activities. They will be able to apply these skills to their daily professional life, but also take advantage of them to develop their scientific career.

In recent years, several courses, conferences, seminars, workshops, FBR and thesis readings have been given for the personal researcher with the aim of equipping them with skills and training to improve their research development. The CIPF has offered courses focused on professional development. These trainings are carried out continuously in the workplace. Besides, English courses are also offered annually at various levels to improve writing and scientific presentation.

CIPF_ Staff



- Women_ 115
- Men_ 55



- Researchers_ 135
- Management_ 35



- Staff_ 170
- Students_ 82
- Collaborators_ 42

CIPF Research Personnel

	NUMBER	%	MEN	WOMEN
TOTAL	135	100%	36	99
PRINCIPAL RESEARCHERS / PLATFORM MANAGERS	21	16%	11	10
POSTDOCTORAL RESEARCHERS	27	20%	9	18
PHD RESEARCHERS	37	27%	7	30
TECHNICAL	50	0%	9	41

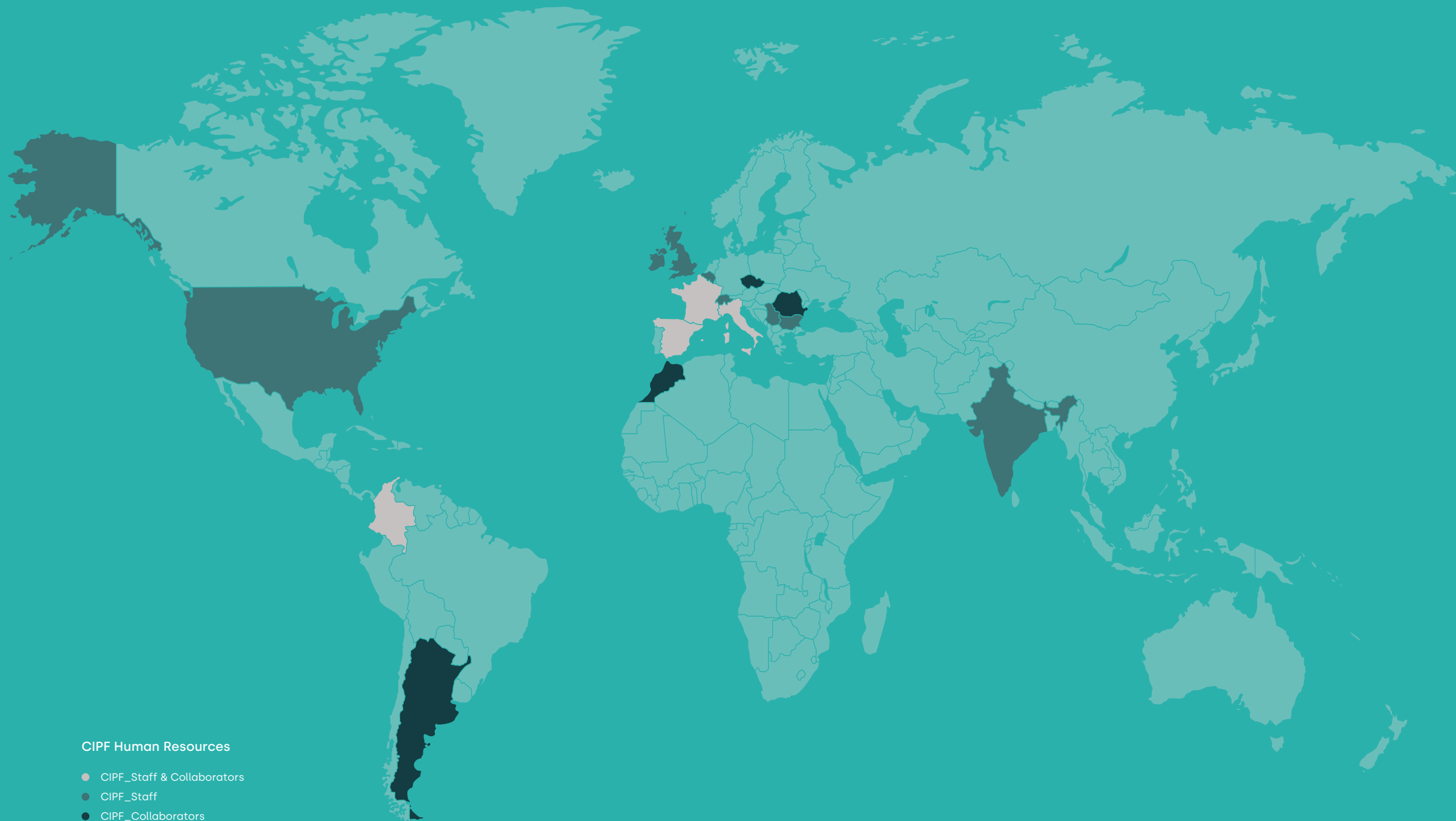
CIPF Staff

NATIONALITIES	MEN	WOMEN	TOTAL
RESEARCHERS	57	113	170
SPANISH	51	104	155
BULGARIAN	0	1	1
INDIAN	0	1	1
SERBIAN	0	1	1
NORTH AMERICAN	0	1	1
ITALIAN	3	4	7
UKRAINIAN	0	1	1
BRITISH	2	0	2
FRENCH	1	0	1
SWISS	0	1	1
BELGIAN	0	1	1
COLOMBIAN	1	0	1

CIPF Collaborators

NATIONALITIES	MEN	WOMEN	TOTAL
RESEARCHERS	12	32	44
SPANISH	7	29	36
CZECH	0	1	1
MOROCCAN	1	0	1
ROMANIAN	1	0	1
ARGENTINA	0	1	1
COLOMBIAN	2	0	2
FRENCH	1	0	1
ITALIAN	0	1	1

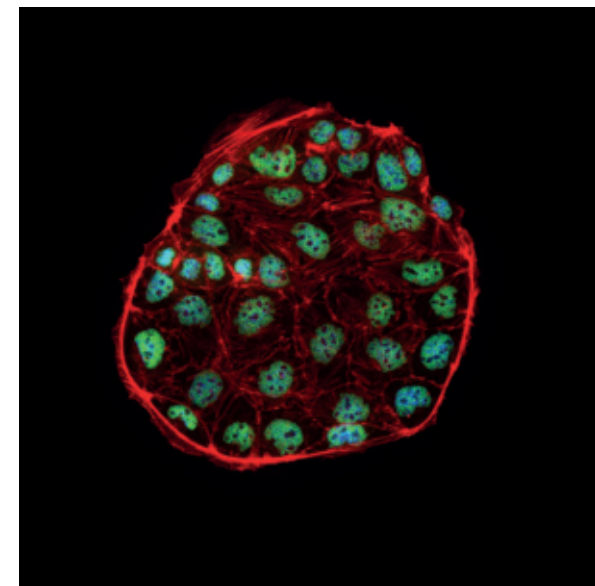
	MEN	WOMEN	TOTAL
STUDENTS	35	55	90
SPANISH UNIVERSITIES	29	43	72
EUROPEAN UNIVERSITIES	2	3	5
VOCATIONAL TRAINING	4	9	13



CIPF Human Resources

- CIPF_Staff & Collaborators
- CIPF_Staff
- CIPF_Collaborators

P R O J E C T S A N D



T R A I N I N G G R A N T S

CIPF_ Competitive Research Funding

ACTIVE PROJECTS 2021

INTERNATIONAL	NATIONAL
8	79

FUNDING ACTIVE PROJECTS 2021

INTERNATIONAL	NATIONAL
1.68 M	10.4 M

NEW PROJECTS AWARDED IN 2021

INTERNATIONAL	NATIONAL
5	29

FUNDING NEW AWARDS 2021

INTERNATIONAL	NATIONAL
1.14M	4.46 M

CIPF_ Non Competitive Research Funding

ACTIVE PROJECTS 2021

INTERNATIONAL	NATIONAL
2	13

NEW PROJECTS AWARDED IN 2021

INTERNATIONAL	NATIONAL
2	8



CIPF Research Support Unit

TEAM MEMBERS

From left to right Zaira Alfonso, Mayra Pilar Rubio, María José Moreto, Cristina Rajo and Laetitia Poidevin.
Cristina Rajo Anadon joined CIPF in 2021 as Grants Support and Management Coordinator.

H2020-EU

GRANT TYPE	TITLE	INVESTIGATOR
H2020-ERC-2014-Advanced Grant	New players in human BAT differentiation and activation.	Antonio Vidal-Puig
H2020-INFRADEV-03-2018-2019	Ensuring long-term sustainability of excellence in chemical biology within Europe and beyond.	Mª Jesús Vicent
H2020-MSCA-ITN-2019	Molecular Machines Functioning in Cells.	Mª Jesús Vicent
H2020- FET-Open Challenging Current Thinking-2018-2020	Regeneration of Injured Spinal cord by Electro pulsed bio-hybrid implant.	Victoria Moreno
COST, European Cooperation in Science and Technology	A sound proteome for a sound body: targeting proteolysis for proteome remodeling.	Rosa Farràs

MCIN - Ministry of Science and Innovation

GRANT TYPE	TITLE	INVESTIGATOR
Research Challenges Collaboration Grant	Development of a gene therapy platform for kidney genetic diseases	Mª Jesús Vicent
Excellent Networks	Spanish network for ion channels	Victoria Moreno
Excellent Networks	TENTACLES Translational Network for the clinical application of Extracellular Vesicles	Mª Jesús Vicent
Excellent Networks	REDEFAR Spanish Drug Discovery Network	Mª Jesús Vicent
Excellent Networks	Consolidation and strategic positioning of the Spanish node in the ERIC EU-OPENSREEN network	Mar Orzáez
Excellent Networks	Molecular mechanisms of neurological alterations (motor and cognitive) in hyperammonemia and hepatic encephalopathy. Therapeutic implications.	Vicente Felipo
Excellent Networks	Deciphering the molecular mechanisms regulated by BAP1 PR-DUB complex of cell invasion shared between human trophoblast and cancer cells.	Vicente Pérez
R&D+I Projects Research Challenges	NRG1 Signaling in cortical circuits: Molecular basis of Schizophrenia	Pietro Fazzari

R&D+I Projects Research Challenges	Phenotypic variability: origins and consequences	Francisco Iborra
R&D+I Projects Research Challenges	Synergistic Approach for Metastatic Tumor and Neurodegenerative Disorder Treatments using Versatile. PolyPeptide-based Conjugates	Mª Jesús Vicent
R&D+I Projects Research Challenges	Channelopathies underlying prefrontal cortex dysfunction in Alzheimer's disease	Isabel del Pino
R&D+I Projects Research Challenges	Targeting Nuclear Receptor REV-ERV-alpha in inflammatory bowel disease	Enric Esplugues
R&D+I Projects Research Challenges	The membrane interactome of BCL-2 proteins as an antitumor target	Mar Orzáez
R&D+I Projects Research Challenges	IRS2/fgf7 axis in the liver	Luke Noon
R&D+I Projects Research Challenges	New bio-active biomaterial for the regeneration of spinal cord injuries	Victoria Moreno
R&D+I Projects Research Challenges	The Role of Neuropilin-2 in the regulation of myeloid-derived suppressor cells	Juan Rodríguez-Vita
R&D+I Projects Research Challenges	NRG1 Signaling in axonal growth growing and regeneration in the cerebral cortex	Pietro Fazzari
R&D+I Projects Proof of Concept	Valorization of a first-in-class MCL-1 inhibitor	Mar Orzáez
Ramón y Cajal Programme	The role of genes involved in brain pathologies	Pietro Fazzari
Ramón y Cajal Programme	Hypothalamic immune-metabolism	Martín Valdearcos
Ramón y Cajal Programme	Trophoblast and cancer biology	Vicente Pérez
Ramón y Cajal Programme	Tumor-stroma communication	Juan Rodríguez-Vita
Researchers Training	Mª del Mar Sánchez new bio-active biomaterial for the regeneration of spinal cord injuries	Victoria Moreno
Researchers Training	Yaiza Arenas Molecular bases of neurological disorders and therapeutic implications	Vicente Felipo
Researchers Training	María Ibáñez Synergistic Approach for Metastatic Tumor and Neurodegenerative Disorder Treatments using Versatile. PolyPeptide-based Conjugates	Mª Jesús Vicent

MEyFP - Ministry of Education and Vocational Training

GRANT TYPE	TITLE	INVESTIGATOR
FPU	Inés Domingo Development of new procedures to characterise biochemical routes altered in breast cancer in vitro and in vivo using metabolomic profiles obtained by NMR spectroscopy	Mª Jesús Vicent
FPU	Paz Boix Development of polymeric combination therapy for the treatment of triple-negative metastatic breast tumors	Mª Jesús Vicent
FPU	Paula Izquierdo Molecular mechanisms of cognitive and motor disorders in hyperammonemia and hepatic encephalopathy. Therapeutic implications.	Vicente Felipo
FPU	Gergana Yvaylova Molecular mechanisms of cognitive and motor disorders in hepatic encephalopathy. Therapeutic implications.	Vicente Felipo
FPU	Mª de les Neus Torres Educating the cell therapy for the treatment of spinal cord injuries	Victoria Moreno
FPU	Irene Soler Caracterización de las diferencias de sexo en la enfermedad de esclerosis múltiple mediante el metaanálisis y la integración de estudios de imagen biomédica, transcriptoma y microbioma.	Francisco García

MS - Ministry of Health

GRANT TYPE	TITLE	INVESTIGATOR
National Drug Plan	Neuroinflammation and alterations in brain plasticity in adolescents with alcohol abuse: gender differences, biomarkers and therapies	Consuelo Guerri

ISCIII - ES Instituto de Salud Carlos III

GRANT TYPE	TITLE	INVESTIGATOR
FIS Project	Personalized treatment against activated AP-1 pathway in lung and breast cancer.	Rosa Farràs
FIS Project	Patient specific disease models as a tool toward effective therapies for hereditary retinal dystrophies	Dunja Lukovic
FIS Project	Clinical studies, genetic bases and prognostic biomarkers in rare neurodegenerative diseases	Carmen Espinós
FIS Project	Preclinical study of the regenerative powers of stem-cell derived astrocytes in the treatment of mouse spinal injury	Slaven Erceg
FIS Project	Development of anti-inflammatory nanotherapies in retinitis pigmentosa	Regina Rodrigo

Miguel Servet Programme	Identification of genetic and metabolic components of the gut microbiota and dietary strategies for preventing noncommunicable diseases	Alfonso Benítez
Miguel Servet Programme	Understanding the molecular mechanism of hereditary retinal dystrophies as a tool to find novel therapies	Dunja Lukovic
PFIS Predoctoral Training Contract	Isabel Hinarejos Predoctoral Molecular bases and prognostic biomarkers for neurodegenerative diseases with cerebral accumulation of iron, and related movement disorders	Carmen Espinós
RETICS	Addictive Disorders Network	Consuelo Guerri
IMPaCT 2020	iDATA-MP Data Science Program of the Precision Medicine Infrastructure associated with Science and Technology	Francisco García
CIBER	Diabetes and associated metabolic diseases (Ciberdem)	Deborah J. Burks
Research Platform	Proteomics platform, genotyping and cell lines	Slaven Erceg
Research Platform	Bioinformatics	Francisco García

CIUCiSD - GVA Valencia Regional Health Ministry

GRANT TYPE	TITLE	INVESTIGATOR
CDEIGENT	Local insulin-induced paracrine signalling (LiiPS) in regenerative medicine and cancer	Luke Noon
AMPER	Grants to finance HR activities to promote research and training in healthcare, biomedical and public health research, with 30 beneficiaries at CIPF in 2021	Cristina Rajo

CIUCiSD-GVA Valencia Regional Innovation, University, Science and Digital Society Ministry

GRANT TYPE	TITLE	INVESTIGATOR
PROMETEO Programme	From genes to therapy in neurogenerative and neuromuscular diseases	Carmen Espinós Máximo Ibo Galindo
PROMETEO Programme	Regenerative medicine of the human uterus: from cell therapy to organ creation through bioengineering	Deborah J. Burks
PROMETEO Programme	MEMBDEATH: Cell death and membranes: a new niche in the fight against cancer	Mar Orzáez
PROMETEO Programme	Molecular and cerebral mechanisms of cognitive and motor disorders in hyperammonemia and hepatic encephalopathy. Therapeutic and diagnostic implications	Vicente Felipo

PROMETEO Programme	Revealing neural activity in the developing and injured brain	Pietro Fazzari
Emerging Groups-GV	Sex and Gender differences study in health with omic approaches	Francisco García
Emerging Groups-GV	tRNAs mitochondrial fragments biomarkers and new therapeutic targets in mitochondrial diseases	Enric Esplugues
Predoctoral ACIF	Mª de les Neus Torres Neural precursor cells and electrical stimulation for spinal cord injury	Victoria Moreno
Predoctoral ACIF	Iván Atienza Mechanisms of peripheric inflammation, hyperammonemia and neurological impairment	Vicente Felipo
Predoctoral ACIF	Beatriz Martínez Optogenetic and pharmacological stimulation of neural stem cells for the treatment of spinal cord injuries	Victoria Moreno
Predoctoral ACIF	Ana González Nrg1: neuronal protection and recovery from stroke in cortical neurons	Pietro Fazzari
Predoctoral ACIF	Mª José Arámbul Reversible control of autophagy by insulin/IGF1 signalling and its involvement in hepatogenesis	Luke Noon
Predoctoral ACIF	Sheyla Velasco. Anti-inflammatory nanotherapies for retinitis pigmentosa treatment	Regina Rodrigo
Predoctoral ACIF	Antonio Serrano Identification of new biomarkers and development of combination polymeric conjugates in metastatic prostate cancer	Mª Jesús Vicent
	María Sancho. Mechanisms by which cyclic GMP and neuroinflammation modulate neurotransmission and cognitive and motor function	Vicente Felipo
APOSTD Postdoctoral	Esther Martínez. Use of Intranasal Polypeptide Based Nanotherapeutics for the Treatment of Glioblastoma Multiforme (GBM)	Mª Jesús Vicent
Grisolia Programme	Sonia Prakash Neural stem cells from inducible-pluripotent stem-cells and PA-Curcumin combinatory treatment for spinal cord injury regeneration	Victoria Moreno
CIDEGENT 2021	Molecular basis of healthy obesity: understanding pathology through paradoxical phenotypes	Stefania Carobbio
CIDEGENT 2021	Cytoskeletal dynamics in cell migration and cancer invasion	Mª Angeles Juanes
CIDEGENT 2021	Channelopathies underlying prefrontal cortex dysfunction and cognitive deficits in Alzheimer's disease	Isabel del Pino
ACOND	Subsidies to support the hiring of doctoral research staff from the Ramón y Cajal grants	Pietro Fazzari, Martín Valdearcos, Vicente Pérez, Juan Rodríguez-Vita

FOUNDATIONS & OTHER PRIVATE ENTITIES

GRANT TYPE	TITLE	INVESTIGATOR
Fundació per Amor a l'Art	Ana Sánchez Monteagudo. Genetic bases and prognostic biomarkers for Wilson and Wilson-like diseases.	Carmen Espinós
FUNDALUCE	Functional study of photoreceptors in retinal organoids derived from patients with hereditary retinopathies	Dunja Lukovic
ONCE Foundation	Development and optimization of anti-inflammatory nanotherapies in hereditary retinal dystrophies	Regina Rodrigo
BBVA Foundation	Role of the leak ion channel NALCN in neurodevelopmental diseases	Isabel del Pino
Ramón Areces Foundation	Identification and modelling of molecular and cellular events of the immune response associated to the appearance of minimal hepatic encephalopathy in cirrhotic patients	Vicente Felipo
La Caixa Health Research	Sensitizing pancreatic cancer to immunotherapy with multimodal precision nanomedicines	Mª Jesús Vicent
La Marató TV3	Combinatory treatment of Neural precursor cells and a new nanoconjugate of fasudil for clinical application in acute spinal cord injury	Mª Jesús Vicent Victoria Moreno
La Marató TV3	Novel therapeutic approaches in achondroplasia	Mª Jesús Vicent
La Marató TV3	Linking cellular defects with clinical manifestations in Cohen Syndrome	Dunja Lukovic
La Marató TV3	Transplant of combined cell therapy from clinical grade iPSC-derived cells with neuroprotective small chemicals in a SCI rat model for central regeneration of spinal pathways	Victoria Moreno
La Marató TV3	Evaluation of cell therapy using genetically corrected RPE cells in small and large animals for the treatment of hereditary retinal dystrophies	Slaven Erceg
AECC Postdoctoral	Polymer therapeutics for Pediatric solid tumors	Mª Jesús Vicent
AECC Postdoctoral	DiscoMito Discovering new therapies for triple negative breast cancer, modulation of apoptosis in mitochondrial membrane	Mar Orzáez
AECC Postdoctoral	Understanding and drugging the Bcl-2 interactome for tumor treatment	Mar Orzáez
AECC Predoctoral	Brain Drug Delivery using polymer therapeutics as intranasal platform towards pediatric glioma treatment	Mª Jesús Vicent
AECC Predoctoral	New therapeutic strategies for lung cancer based in the control of the proteins synthesis by plyamines	Rosa Farràs
INDACEA	Precision medicine for Dravet syndrome	Máximo Ibo Galindo
Dravet	Generation of models in Drosophila melanogaster by knock-in of patient mutations	Máximo Ibo Galindo
Young IBRO	International collaboration between Del Pino Lab in Spain and Di Cristo Lab in Canada	Isabel del Pino

AFM Téléthon	The cell therapeutic strategy for hereditary retinal dystrophies in small and large animals, MERTK associated Retinitis pigmentosa	Slaven Erceg
EMBO Exchange Grant	Identification of mechanisms by which hyperammonemia alters GABAergic synapses in primary cultures of cerebellum containing Purkinje neurons	Vicente Felipo
EASI-Genomics	Molecular basis of NBIA and NBIA-mimic	Carmen Espinós
IDIBAPS	Implication of the specific cutaneous immune profile determined in peripheral blood in the prognosis and responsiveness to immunotherapy in melanoma	Francisco García
INDACEA	Precision medicine in Dravet syndrome	Máximo Ibo Galindo
María Sancho	Mechanisms by which cyclic GMP and neuroinflammation modulate neurotransmission and cognitive and motor function	Vicente Felipo

RESEARCH NETWORKS AND PLATFORMS

ENTITY	TITLE	INVESTIGATOR
UBIRED	UBIRed is a network committed to improve the quality, productivity and impact of the research groups in Spain specialised in the study of ubiquitin and UBL proteins and their roles in cell proliferation, differentiation and cancer.	Rosa Farràs
PROTEOSTASIS	European network with members from almost all countries in Europe. Its main objective is to facilitate research and collaborations in the fields of Ubiquitin/ Proteasome, Ubiquitin-likes, autophagy and lysosomal systems in health and diseases.	Rosa Farràs
NANOMED	Spanish Nanomedicine Platform as an application to the development of new diagnostic systems and therapy, as well as the improvement of existing ones.	Mª Jesús Vicent
TENTACLES	Translational NeTwork for the CLinical application of Extracellular VesicleS, TeNTaCLES	Mª Jesús Vicent
RD-Connect	Integrated platform connecting databases, registries, biobanks and clinical bioinformatics for rare disease research	Francisco García
EU OPENSREEN	European high capacity screening network	Mª Jesús Vicent

Platforms and Networks

COMUNITAT VALENCIANA PRECISION MEDICINE STRATEGY.
Therapeutic treatments aimed at individual patients based on their biomarkers, genetic, phenotypic or psychosocial characteristics. Coordinated by INCLIVA. Participants: CIPF, IIS La Fe, ISABIAL, FISABIO (Hospital Dr. Peset, Hospital Arnau de Vilanova).

COMUNITAT VALENCIANA STRATEGY OF COGNITIVE IMPAIRMENT.
Cognitive and functional deterioration associated with aging and chronic diseases. Coordinated by ISABIAL. Active members: CIPF, INCLIVA, IIS La Fe, FISABIO, FIHGUV.

COMUNITAT VALENCIANA RARE DISEASES STRATEGY.
Description of new genes causing RRSE, identify, develop and validate biomarkers that contribute to improve their diagnosis, prognosis and treatment. Coordinated by INCLIVA. Participants: CIPF, IIS La Fe, FISABIO

COMUNITAT VALENCIANA STRATEGY OF INNOVATIVE MEDICINE.
New approaches to accelerate and enhance drug development and increase the efficiency and effectiveness of this process. Coordinated by IIS La Fe. Participants: CIPF, INCLIVA, FISABIO.

GOVERNMENTAL REGIONAL STRATEGY FOR ARTIFICIAL INTELLIGENCE AND BIG DATA IN HEALTH.
Development of Big Data and Artificial Intelligence projects in Health. Coordinated by INCLIVA. Participants: CIPF, FISABIO, IIS La Fe.

GOVERNMENTAL REGIONAL STRATEGY FOR EARLY MOLECULAR DETECTION OF CANCER.
New approaches to accelerate and enhance drug development and increase the efficiency and effectiveness of this process. Coordinated by FIHGUV. Fundación Investigación Hospital General Universitario de Valencia. Participants: CIPF, INCLIVA, FISABIO.

RETICS, THEMATIC NETWORKS OF COOPERATIVE RESEARCH IN HEALTH.
Addictive Disorders Network, RTA ISCIII.

PRB3 ISCIII, PROTEOMICS, GENOMICS AND CELL LINES.
BNLC, National Bank of Cellular Lines, Valencia node. Network structure with several coordinated nodes with the objective of guaranteeing the availability of human embryonic stem cell lines for biomedical research.

TRANSBIONET.
Spanish Network of Translational Bioinformatics and Computational Biology Units (<https://inb-elixir.es/transbionet>), for collaborative developments on the use of technologies of high performance and its massive application in research and clinical practice.

UBIRED.

Network to improve the quality, productivity and impact of research groups in Spain specialized in the study of ubiquitin and UBL proteins and their role in the cell proliferation, differentiation and cancer.

PROTEOSTASIS.

Collaboration network supported by the European Union (EU), made up of more than 100 laboratories of companies, universities and research centers from 20 European countries, to promote the research on protein life cycle, protein degradation and modification in the cell.

TENTACLES.

Translational NeTwork for the CLinical application of Extracellular VesicleS (EV) involves highly competitive researchers in the study of EVs and the development of new tools for effective use in the clinical setting.

REDEFINE.

Spanish Drug Discovery Thematic Network that seeks to speed up the drug discovery process discovery of new drugs in direct and innovative connection with the market and according to the requirements of the pharmaceutical and biotechnological industry.

SDDN.

Spanish Drug Discovery Network (SDDN), a network of Spanish professionals who work in the discovery and development of new drugs.

NANOMED.

Spanish Platform of Nanomedicine as an application to the development of new systems of diagnosis and therapy, as well as the improvement of existing ones.

RD-CONNECT.

Multidisciplinary project that unifies participants from the EU and other countries to create a global infrastructure for rare disease research.

EUROPEAN INNOVATION PARTNERSHIP.

Platform for the promotion of an active and healthy lifestyle throughout life and for healthy ageing.

COST.

European Cooperation in Science and Technology, organization for the creation of networks of research, offering spaces for collaboration between researchers from all over Europe.

Research Consortia

CIBER, NETWORK BIOMEDICAL RESEARCH CENTER CONSORTIUM.

Public research consortium created at the initiative of the Carlos III Health Institute (ISCIII) to promote research of excellence in Biomedicine and Health Sciences that is carried out in the National Health System and in the Science and Technology System. CIBERDEM, Deborah Burks. CIBERER, technical office. <https://www.ciberisciii.es/>

EU-OPENSOURCE ERIC.

European Consortium of Research Infrastructures for chemical biology constituted by Member States of the European Union to support research in life sciences and its translation to medicine and agriculture. <https://www.eu-openscreen.eu/>

IDATA-MP.

IMPACT-Data is the IMPACT program (Infrastructure for Precision Medicine associated with Science and Technology) that is oriented towards the development and validation of an environment for the integration and joint analysis of clinical, molecular and genetic data, for its secondary use as in a coordinated manner with the other IMPACT programs.

The iDATA-MP project for the IMPACT Data program focuses on the development of a data integration and analysis environment that includes the ability to both answer questions coming from clinical groups and formulated by the Predictive Medicine and Genomic Medicine Programs. <https://impact-data.bsc.es/>



PRÍNCIPE FELIPE
CENTRO DE INVESTIGACIÓN



GENERALITAT
VALENCIANA
Conselleria de Sanitat
Universal i Salut Pública



EUROPEAN UNION
European Structural and Investment Fund



EUROPEAN UNION
European Social Fund



HR EXCELLENCE IN RESEARCH



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