Área Temática:	**Biociencias y biotecnología**
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Título:	From brown adipose tissue to hepatic function

Resumen de la Memoria:

I obtained my Ph.D. in Biology at the University of Geneva in 2013 in the laboratory of Prof. Foti, a world specialist in non-alcoholic fatty liver diseases (NAFLD). I investigated the role of the tumor suppressor PTEN in the molecular mechanisms altered by human hepatitis viruses and resulting in hepatic metabolic defects such as steatosis and hepatocellular carcinoma (HCC). This study resulted in 2 publications as first author in Hepatology and Journal of Hepatology, further recognized by the attribution of two prizes.

During my last year in Foti's laboratory as a postdoctoral fellow, I investigated the impact of hepatic inhibition of PTEN on the glucose and lipid metabolism of peripheral organs. I showed that PTEN deficiency in hepatocytes triggers liver-to-peripheral organ crosstalks resulting in a decreased adiposity and improved muscle insulin sensitivity. The results of this study as first author have been published in 2015 in the Journal of Hepatology.

I then chose to focus my next investigations on metabolic disorders associated to obesity and type II Diabetes. In 2014, I initiated a postdoctoral stay in the laboratory of Prof. Villarroya, a world leader in the field of adipobiology, at the University of Barcelona, investigating the molecular mechanisms involved in the communication of brown adipose tissue with peripheral organs, among which, the liver. My work is thus in constant link between adipocyte biology and liver physiopathology. Our findings identified the Kininogen system as a relevant component of BAT thermogenic regulation that provides auto-regulatory inhibitory signaling to BAT. This study as first author has been published in 2020 in Nature Communications. We also showed that acquisition of a beige phenotype in perivascular adipose tissue depots is associated with upregulation of batokines possibly targeting the vascular system. I published this study as last author in 2021 in Frontiers of Physiology.

In addition, I have contributed to different projects in Villarroya's lab involving the discovery of new batokines secreted by BAT and affecting peripheral cells. Those collaborations resulted in 7 publications (including a Nat Comms and a Cell metab) and 4 reviews.
It is worth mentioning that I had 2 maternity leaves, in 2016 and in 2020/2021, of 6 months each.

To summarize, my domains of expertise concern liver physiopathology, as well as brown adipose tissue biology, thus combining two distinct areas of expertise. At this stage of my career, I consider myself ready to carry out a leadership in the development of research and I feel totally prepared to undertake it successfully.

Resumen del Currículum Vitae:

I obtained my Ph.D. in Biology at the University of Geneva in 2013 in the laboratory of Prof. Foti. During those years, I developed my knowledge on a broad-ranging variety of subjects all related to the liver, such as fatty liver diseases, hepatic virology and cancer. More specifically, I investigated the role of the tumor suppressor PTEN in the molecular mechanisms altered by human hepatitis viruses and resulting in hepatic metabolic defects. Those studies resulted in 2 publications and they were further recognized by the attribution of two prizes (Janssen Virology Award and Junior Hepatology Prize 2013 awarded by the Swiss Society of Gastroenterology).
I obtained my Ph.D. with full marks and 7 original research papers (2 as first author) along with four reviews/book chapters (3 as a first author). My Ph.D. was awarded with the Gorjux prize from the University of Geneva.
During my last year in Foti's lab as a postdoctoral fellow, I investigated the impact of hepatic inhibition of PTEN on the glucose and lipid metabolism of peripheral organs. I could show that PTEN deficiency in hepatocytes triggers liver-to-peripheral organ crosstalks resulting in a decreased adiposity and improved muscle insulin sensitivity. The results of this study have been published in the Journal of Hepatology.
I then chose to focus my next investigations on general metabolic disorders associated to obesity and type II Diabetes. In early 2014, I was awarded with an Early Postdoc Mobility Fellowship from the Swiss National Foundation that had allowed me to initiate a postdoc in the laboratory of Prof. Villarroya at the University of Barcelona. I then obtained an Advanced Postdoc Mobility Fellowship, as well as 2 Juan de la Cierva Formación and Juan de la Cierva Incorporación fellowships from the Spanish Minister of competitiveness. In 2016, and late 2020 I had 2 maternity leaves of 6 months each. I am currently a Postdoctoral scientist with a CIBER contract in Villarroya's lab, investigating the molecular mechanisms involved in the communication of brown adipose tissue with peripheral organs. I focused my research on the role of kininogen 2, a potential "batokine", secreted by brown adipose tissue and regulating homeostasis in other peripheral organs. This study, which I leaded as first author, was published in Nature Communications in 2020. I also published in 2021 as corresponding author in Frontiers of Physiology a study where we showed that acquisition of a brown/beige phenotype in perivascular adipose tissue is associated with upregulation of batokines. In addition, I have contributed to different projects in Villarroya's lab, as well as a long standing international collaboration with Prof. Manlio Vinciguerra in Czech Republic that resulted in 7 published papers and 4 reviews.
During my Ph.D years and all along my postdoctoral career, I have trained 9 students in their Bachelor, Master, Ph.D. or ERASMUS stays. I have as well promoted scientific dissemination by participating and organizing the annual "Diabetes Day" at the University of Geneva from 2010 to 2013.
These years of training made me an independent scientist, now capable of conducting studies, writing projects and finding my own funds. My goal is now to establish my independent laboratory focused on the study of inter-organ signalling in relation to liver patho-physiology, for which I consider I am particularly suited given my research expertise acquired all along my career.

Área Temática:	**Biociencias y biotecnología**
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Título:	Estudios de los efectos del polifosfato inorgánico en la fisiología mitocondrial

Resumen de la Memoria:

Parkinson's Disease (PD) is a movement disorder which, in the long-term, can also present with non-motor symptoms, including dementia. Mitochondrial dysfunction has been broadly demonstrated as an early event in PD. In fact, the deleterious action of aggregated α-synuclein (αSyn), which is the main component of the Lewy Body, in mitochondrial bioenergetics has already been proven as a major trigger of mitochondrial dysfunction. However, the exact molecular components and the mechanisms that drive mitochondria to dysfunction in PD remain still unclear. Inorganic polyphosphate (polyP) is a ubiquitous polymer, even if its high localization within mammalian mitochondria has been demonstrated. Mostly due to the structure of its bonds, which are similar to those of ATP, polyP has shown to be a key energy metabolite in these organisms, it also plays a regulatory role in mitochondrial physiology under basal conditions. However, the exact degree of interactions between polyP and the other components of bioenergetics and the regulatory effects of the polymer on mitochondrial physiology; as well as the molecular mechanisms underlying the effects of polyP in this physiology, especially under pathological conditions, remain unknown. Our preliminary data show decreased mitochondrial bioenergetics and dysfunctional mitochondrial physiology in cells enzymatically depleted of mitochondrial polyP (MitoPPX), compared to Wild type (Wt) cells, under basal conditions and when using drugs known to mimetic PD. The intriguing possibility is that polyP could act as a potent reservoir for easily available energy, whose action on the regulation of mitochondrial physiology could be explained through its role as a substrate of inositol multikinase (IMPK), which is a regulator of AMPK-activated protein kinase (AMPK), a major mammalian cellular energy gauge involved in mitochondrial physiology. Herein, we propose to test our hypothesis that; mammalian mitochondrial polyP is a key regulator of cellular bioenergetics and of mitochondrial physiology, in αSyn-induced models of PD. The effects of polyP on mitochondrial physiology are exerted via the regulation of the IPMK/AMPK axis. To do this, we will use models of PD in which increased aggregation of αSyn is present. These models include differentiated Wt and MitoPPX SH-SY5Y cells and human neurons differentiated from induced pluripotent stem cells (iPSCs); and mice. Using a cellular and molecular biology, -omics, and biochemistry techniques, we will study the state of bioenergetics, the cellular presence and concentration of polyP; and the relationship between the status of bioenergetics and the levels of mitochondrial polyP. Then, we will assay mitochondrial dysfunction, except for bioenergetics dysregulation, to determine the causal role of polyP in this process, through the use of different strategies, to modify the mitochondrial levels of the polymer. Lastly, we will study the molecular mechanism that explain the plausible effects of polyP on mitochondrial physiology, which we propose involves the regulation of the IPMK/AMPK axis. The long-term goals of this proposal are to i) increase our knowledge of mitochondrial physiology, ii) better understand the mechanisms underlying mitochondrial dysfunction in PD, and iii) propose the metabolism of mitochondrial polyP as a pharmacological target in PD.

Resumen del Currículum Vitae:

My long-term career goal is to unravel the mechanisms driving neuronal mitochondria to dysfunction and failure in aging and in other diseases and conditions affecting the central nervous center, such as Parkinson's Disease (PD). Moreover, another important component of my long-term career goal is to contribute to the discovery of new strategies to counteract or to prevent mitochondrial dysfunction on those conditions, impairing people's life. As a part of my long-term goals, I would also like to be an outstanding professor and a trusted mentor, as well as a respected and knowledgeable independent investigator within my field of knowledge and the whole scientific community. I have an extensive background in mitochondria and specific training in neurodegeneration, including PD. During my time as a PhD student in Spain, I was involved in three projects, all of them related with the study of mitochondrial dysfunction in cellular models of neurodegenerative diseases. Moreover, during my time at MRC-Mitochondrial Biology Unit, (Cambridge, UK), I worked in Dr. Michael M. Murphy's laboratory, who is a worldwide recognized expert on mitochondrial dysfunction, ROS measurement as well as on the use of mitochondrial-targeted antioxidants.

I spent my first year as postdoctoral researcher at NYU working under the mentorship of Dr. Blas Frangione, who is a notable expert on protein biology and neurodegeneration. After that, I continued my postdoctoral training at the laboratory of Dr. Evgeny V. Pavlov, who is an internationally recognized leader in the study of mitochondrial inorganic polyphosphate (polyP), as well as a reputed mitochondrial physiologist. During my last two years as postdoctoral trainee, I conducted my own, independent research project, which aimed to elucidate the role of polyP as a mitochondrial chaperone in aging and in neurodegeneration. To increase my knowledge on protein homeostasis, I visited the laboratory of Dr. Ursula Jakob, at University of Michigan, during Fall 2017.

On May 2018, I have been granted with a K99/R00 award from NIH/NIA, to conduct a project entitled "Inorganic polyphosphate as a chaperone in aging and in neurodegenerative diseases". The R00 component of the Award was activated on September 1st, 2019, when I started my independent position (Assistant Professor, tenure track) at Rutgers University. The main research goal of my laboratory is to contribute to the better understanding of the role of polyP in mitochondrial dysfunction in neurodegenerative disorders, including PD. During my time as a Faculty at Rutgers, I have published 9 scientific manuscripts. Two of them are research manuscripts conducted in my laboratory in which I am the corresponding author. Moreover, we have secured internal and external funding (AHA). This demonstrates determination to achieve my long-term goals, even when faced with difficult circumstances such as the COVID-19 pandemic.

At the current moment, my laboratory is formed by one postdoctoral researcher, three PhD students and one undergraduate student (NIH-funded). Half of the members of my laboratory belong to one or more underrepresented minorities in biomedical research and the vast majority of them are women. Increasing diversity in the biomedical field and providing my laboratory members with an outstanding mentorship is a crucial part of my research philosophy.

Área Temática:	**Biociencias y biotecnología**
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Título:	Development and characterizarion of small molecules modulating OGG1 activity for the treatment of cancer

Resumen de la Memoria:

I am a geneticist and a cancer biologist studying how genetic and environmental factors explain a predisposition to cancer. Also, I am interested in understanding the molecular mechanisms cancer cells use to initiate tumorogenesis and promote cancer cell survival during tumor progression. My goal is to identify cancer vulnerabilities and new drugable targets for developing selective inhibitors/activators with anticancer properties and the potential to be translated into clinics.

Resumen del Currículum Vitae:

I am a cancer biologist and geneticist working at the intersection between cancer genetics, telomere biology, and the drug discovery field. My goal is the identification of new druggable targets in cancer for the development of specific small molecule inhibitors/activators with the potential to become new anticancer treatments.

I did my Ph.D. in the Human Genetics group here at the Spanish National Cancer Research Center (CNIO) under the supervision of Dr. Javier Benitez. During that period, I was involved in the molecular characterization of common genetic variants in genes from the Base Excision Repair pathway (BER), modifying the cancer risk susceptibility for hereditary breast cancer patients harboring mutations in BRCA1 and BRCA2 genes.

During my Ph.D., I did a short stay at the laboratory of Prof. Thomas Helleday at Karolinska Institute (KI), where I could explore the therapeutic potential of small molecules inhibiting 8-Oxoguanine DNA Glycosylase (OGG1), from the BER pathway, in BRCA1 deficient breast cancer cells.

After obtaining my Ph.D., I moved to the laboratory of Prof. Thomas Helleday as a Postdoctoral Fellow in October 2017, where I led a research project focused on the molecular characterization and implementation of OGG1 inhibitors and activators for cancer treatment and inflammation.

During this time, I have published several manuscripts exploring different strategies to implement OGG1 small molecules for the treatment of cancer as well as characterizing the mode of action of these compounds in cancer cells and animal models.

In December 2020, I moved to the Instituto de Investigaciones Biomédicas "Alberto Sols" (IIBM-CSIC) in Madrid with a Postdoctoral AECC Fellowship. Here, at the Laboratory of Rosario Perona, I have been working on a project that combines personalized medicine and drug development for treating squamous cell carcinoma of the skin (cSCC) in preclinical in vivo models.

I am 1st author of 7 articles in top-tier journals such as Science, Nucleic Acid Research, or Clinical Translational Medicine, and coauthor of 9 SCI articles. (median IF=8,5; 88% Q1; H-index=11).

Área Temática:	Biociencias y biotecnología
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Título:	Single-cell-omics in catshark to solve the fin-to-limb transition enigma

Resumen de la Memoria:

I developed my research career at the crosstalk of three basic Biology fields: Genetics, Development and Evolution. I have investigated how the non-coding genome, in particular enhancers, and the chromatin architecture that bridges enhancers with their target promoters in the cell nucleus regulate gene expression during embryonic development. I have also questioned the mechanisms that changes in long-range gene regulation can lead to disease. As a postdoc, I set out to understand how cis-regulatory elements and the genomic architecture have impacted on the evolution of appendage diversity. First, performing expression, chromatin accessibility and chromatin structure experiments, we produced a high-quality genome and uncovered regulatory mechanisms underlying the peculiar pectoral fins of skates (Leukoraja erinacea). In parallel, using the non-conventional small-spotted catshark (Scyliorhinus canicula), I currently investigate the regulatory networks that define median versus paired fins, two structures that appear similar but have evolved independently and have different origin on the body axis. My postdoctoral projects have set the experimental and intellectual basis for developing my own research line. In particular, I wish to investigate at the single-cell level the regulatory mechanisms that have led to gene expression changes of central appendage patterning genes underlying the fin-to-limb transition comparing equivalent datasets from catshark fins and mouse limbs. The relevance of my work is mirrored in the high-impact publications that I have contributed as co-author (2x Nature Genetics, Cell, Cell Reports, Genome Research), in my commentary article in PNAS, my first-author publication of my PhD research also in PNAS and in the latest first postdoctoral first author publication in Nature.

To pursue my research trajectory, I have worked in three countries, Greece, Germany, and Spain, and I have been in six different labs, while I have visited two additional labs in Austria and France for training and setting up collaborations. This mobility and participation in numerous projects have helped me build a scientific network that I expand with disseminating activities. In fact, I have communicated my research in several conferences and awarded for it two times: Best Undergraduate talk in 2010 in 5th Panhellenic Conference of Bioscientists in Athens (Greece) and Best Basic science talk in 2018 in the European Conference of Human Genetics in Milan (Italy).

Meanwhile, I have acquired experience with many -conventional or not- experimental models (cell lines, primary cells, mouse, zebrafish, catshark, skate), I have implemented in my research most state-of-the-art technologies (RNA-seq, ATAC-seq, Chromatin Conformation Capture, ChIP-seq, STARR-seq, Single-cell technology), some of them established by me. In the last years, I have extended my toolset to analysing my own bioinformatic data. Moreover, I have always sought to transfer my theoretical and experimental knowledge to other colleagues or students. Last, I have been able to raise my own funding for my postdoctoral research obtaining one of the very competitive EMBO Long-Term Fellowships and recently, a LEaP award from the Maria de Maeztu Unit to help finance the first single-cell experiments of the here proposed RyC project.

Resumen del Currículum Vitae:

My aim is understanding the role of the non-coding genome and its 3D organization in Development, Disease and Evolution. I graduated in Biology (Athens University, Greece) and, for my BSc thesis, I assessed the role of coding and non-coding mutations in osteoporosis. Thus, I learnt basic molecular techniques and developed my communication skills (Best Undergraduate talk; 5th Panhellenic Conference of Bioscientists 2010, Athens, Greece). Next, in the Master's program Molecular Medicine at the Charité (Berlin, Germany) I gained knowledge on the molecular mechanisms behind diseases and worked in three labs using different experimental models. Ultimately, the medical setting that I was exposed to, fuelled my interest in understanding the basis of congenital diseases and phenotypic variations.

Then, I pursued my PhD in the lab of Prof. Mundlos (MPIMG, Berlin, Germany), where I investigated the role of chromatin architecture and enhancers in gene regulation and their implication in limb malformations using the mouse as genetic model. During this period, I dissected how chromatin folding impacts on the regulatory logic of the Shh landscape. This study was amongst the first in the field showing that chromatin topology provides gene transcriptional robustness (article in PNAS, 2019; first author). These results explain regulatory mechanisms during embryonic development and contribute to our understanding on the role of non-coding mutations in human congenital defects. During my PhD, I became skilled in mouse genetics and genomic modifications by CRISPR/Cas9, multiple functional genomics approaches (ChIP-seq, 4C-seq, Capture-HiC, RNA-seq) and established two new techniques (ATAC-seq and STARR-seq). This ample state-of-the-art toolset allowed me to contribute to several other high-ranking publications and to supervise one Bachelor and two Master students. Finally, to disseminate my research results, I attended several conferences and received the award for Best Basic Science talk (ESHG 2018, Milan, Italy).

In 2019, I joined the lab of Prof. Gómez Skarmeta (CABD, Seville, Spain) as a postdoc and worked on the skate genome (Marlétaz et al, bioRxiv, 2022, accepted in Nature), a collaborative project, where we found genomic rearrangements and a skate enhancer affecting fin patterning genes underlying the wing-like fins of skates. In parallel, I developed another research project (funded by a prestigious EMBO Long Term Fellowship) to elucidate the role of enhancers and chromatin architecture in the development of median versus paired fins using the small-spotted catshark. The excellence of the institute, the resources and the mentorship from Dr. Tena and Dr. Lopez-Rios have helped me to develop my projects, while shaping my future research line. Visiting the lab of Dr. Sylvie Mazan (CNRS, Observatoire Océanologique, Banyuls-sur-mer, France) initiated a fruitful collaboration and taught me how to work with and maintain catshark embryos. Moreover, I have developed ample bioinformatic skills analyzing NGS data and have optimized and established single-cell experiments in catshark embryos. The LEaP grant I was awarded recently (Maria de Maeztu Unit) together with the RyC funding will support me to establish my research line, to apply for a competitive ERC starting grant and will guide me towards being an independent group leader.

Área Temática:	Biociencias y biotecnología
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Título:	The ubiquitin system: from protein quality control to DNA damage repair

Resumen de la Memoria:

My area of expertise and interest lies in ubiquitin-dependent processes. The small protein ubiquitin becomes attached to a target substrate protein via a ubiquitin ligase enzyme. Protein ubiquitylation has many possible outcomes, which largely depend on the number of conjugated ubiquitin molecules. Typically, poly-ubiquitylated proteins are destined for degradation by the proteasome or other disposal mechanisms like autophagy; mono-ubiquitylation is a common signalling mechanism and modulates protein-protein interaction. Overall, ubiquitylation controls diverse cellular functions, including protein turnover, endocytosis, autophagy, and DNA damage repair.

In my pre-doctoral years, I studied the mechanisms of ubiquitylation and disposal of defective proteins at the endoplasmic reticulum (ER). Essential cellular activities, such as protein and lipid biosynthesis, take place in the ER, and it is pivotal for cell survival to keep this organelle healthy. Defective proteins can threaten ER homeostasis: poor ER functionality underlies several diseases including neurodegeneration. Thus, misfolded/non-functional proteins need to be promptly eliminated through quality control mechanisms. During a research internship at the CNR Institute for Neuroscience (Milan, Italy), I studied how human cells dispose of a pathological ER protein, P56S-VAPB, which is expressed in the motor-neuron disease Amyotrophic Lateral Sclerosis. During my PhD at the CRG (Barcelona, Spain), I characterised how the ER ubiquitin ligases Hrd1 and Doa10 process misfolded proteins and how their activity controls ER homeostasis in the yeast S. cerevisiae.

When I started my postdoc, I intended to continue studying ubiquitin-dependent processes: this field is very versatile and I expected it could push the boundaries of my area of expertise. At the MPI for Biochemistry (Munich, Germany) first, and the University of Oxford (Oxford, UK) later, I characterised the role of ubiquitin and the ubiquitin-like protein SUMO in the repair of a type of DNA damage: the DNA-protein crosslinks (DPCs). DPCs are bulky lesions consisting of a protein covalently bound to DNA. DPCs stall DNA replication forks; therefore, they are particularly toxic for highly replicating cells, such as cancer cells. As a matter of fact, some DPC-inducing agents are widely used in chemotherapy.

DPCs can be repaired via proteolysis: a specific protease digests the protein component of a DPC, removing the bulky obstacle and allowing replication fork progression. DPC proteolysis repair is a recent and growing field, with strong implications for cancer therapy. My past work highlighted how ubiquitylation and SUMOylation of DPCs aid their repair. In the future, I plan to clarify some of the mechanistic aspects of the DPC proteolysis pathway, identify novel components (starting from the ubiquitin ligases) and understand the consequences of faulty repair on genome stability. These objectives will, first and foremost, help to gain a better understanding of DPC proteolysis repair; secondly, they will pinpoint potential druggable targets to increase the efficacy of commonly used therapeutic drugs. I have extensive and proven technical expertise and knowledge to deliver this plan.

Resumen del Currículum Vitae:

After completing my studies in Italy in 2008, my research trajectory started at the CNR Institute for Neuroscience (Milan, Italy). Shortly after, I began my doctorate at the CRG (Barcelona, Spain) after being awarded a "La Caixa" international fellowship. Here, I worked on endoplasmic reticulum homeostasis and protein quality control mechanisms in the lab of Dr Pedro Carvalho. I got my PhD in 2015 from the Universitat Pompeu Fabra. During my first postdoc at the Max-Planck Institute for Biochemistry (Munich, Germany) with Prof Stefan Jentsch, I became interested in the post-translational signalling during DNA damage repair. In 2017, after Prof Jentsch sadly passed away, I moved to the Department of Oncology, University of Oxford (UK) for a second post-doc with Prof Kristijan Ramadan. Here, I was awarded an EMBO long-term fellowship to work on DNA damage repair. Overall, as an Italian national, I have spent over 7 years of post-doctoral training abroad (overall 12 years abroad, counting pre-doctoral training). My dedication to science and communication skills have been recognised by the award of 2 international fellowships.

Through this solid mobility record, I built an extended network of colleagues. I have been part of international groups and institutes; I participated in ambitious projects funded by the European Research Council and the Medical Research Council. I effectively contributed to their scientific output, with a consistent production of at least 3 medium-high impact articles in cell biology (EMBO J, Cell, Cell reports) at every career step (adding up 12 papers in the JCR). As a member of these groups, I benefitted from international collaborations, well documented in my publications.

The overall article citations (950, h-index 10 in Scopus) demonstrate the high impact of my research on multiple topics. I disseminated my work at international conferences and as an invited speaker in centres of excellence such as the CNR (Milan, Italy) and the "Centro de Investigaciones Biologicas" Margarita Salas (Madrid, Spain). Hence, through my publications I gained good visibility within my field of expertise.

To gain or improve my skills, I have attended several voluntary courses. For example, the online course "Writing in the sciences" has been instrumental to write my most recent post-doctoral papers. As a senior scientist, I revise articles for high-impact journals such as Molecular Cell and Cell reports. I am also a guest editor for Frontiers in Cell and Developmental Biology. I supervise students at all levels and co-direct a PhD thesis.

I consider that my profile perfectly aligns with the goals and priorities of the Spanish research system, and I have a clear plan to develop my research objectives at the CIB Margarita Salas (Madrid, Spain).

Área Temática:	**Biociencias y biotecnología**
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Título:	RNA biology in plants

Resumen de la Memoria:

The topic of my doctoral work was gene silencing by small non-coding RNAs. I used the plant Arabidopsis thaliana to investigate how the double-stranded RNA precursors of small silencing RNAs are made. The assumption was that an RNA-dependent RNA Polymerase somehow recognizes single-stranded RNA with "aberrant" features and uses it as template for double-stranded RNA (dsRNA) synthesis, with subsequent processing into small RNAs by dsRNA-directed ribonucleases. This model also explained how small RNA-guided transcript cleavage would generate RNA fragments for dsRNA synthesis by the RNA-dependent RNA

Polymerase. In a paper published in The Plant Cell in 2016, I showed that this model was not right. The RNA-dependent RNA Polymerase needs the small RNA-guided silencing complex, not the cleavage fragments it generates, to make dsRNA. This important conclusion sent the small RNA field in a new direction, and the details of how the RNA-directed RNA Polymerase is recruited by the silencing complex are still being worked out.

In my post doctoral work, I switched fields to work on N6-methyladenosine (m6A) in mRNA and the specialized RNA-binding proteins that bind to this modified nucleotide. Nothing was known about these proteins and their biological roles when I started. I have been able to make good progress in this booming field. Thanks to my work, involving up to five research stays in three countries (UK, Germany, Spain), six papers (The Plant Cell, Development, eLife (x2), and two pre-prints in revision at PNAS and EMBO Journal) and a review (Plant Physiology) so far, we now know that m6Abinding proteins constitute a crucial element of stem cell proliferation. They bind directly to transcripts encoding proteins involved in basic cellular function, in particular translation and energy metabolism, presumably enhancing expression of these genes to provide building blocks for growth. Exactly how that happens is a question of deep biological significance that I wish to investigate in my own group in Spain. In additional to in-depth biochemical characterizations, I wish to find out the biological functions of several effector proteins involved in the process, the so-called 'm6A readers', for which nothing is yet known. My preliminary results suggests that some of them may be involved in seed development and lateral branching, two matters of fundamental importance to our society from an agricultural perspective.

Resumen del Currículum Vitae:

Due to family and financial circumstances, I focused my first university studies on applied science (engineering) to rapidly find a job at a young age, obtaining a permanent position at the public television channel (TVE) in 2000 through public competitive examination. Because biology had always been my vocation, in 2003 I enrolled for a Licenciatura in Biology while having a full-time job at TVE. In 2011, after a short Erasmus exchange and graduation, I quit my permanent position at TVE to start a PhD in RNA Biology at the University of Copenhagen.

Unconventionally, I have remained 7 years in the same group where I did my PhD. The reasons for that are sound. I began my PhD in a newly-established lab and I had to start projects from scratch, generating tools and long-term plant lines. Although the main topic of my thesis focused on microRNA-mediated regulation by ARGONAUTE proteins in Arabidopsis, I also started a parallel project on the antiviral role of the Dicer-like protein DCL2. By the end of my PhD in 2015 I still had no publications, but an overwhelming amount of material and promising projects that I wished to finish. Thanks to my decision to stay, the results from many of them have been published or followed up by students and are now close to publication.

During my PhD I also started a side project in the emerging field of Epitranscriptomics, studying a regulatory modification on mRNA called m6A. Following my first publication on that field in Plant Cell (2018), I established a new and independent line of research, leading the team formed with the funding that the article attracted through proposals that largely contained my ideas and preliminary results (see C.3). A follow-up publication in Development (2020) and two studies in eLIFE (2021), in which I am first and co-corresponding author, have situated our group among the top international labs working on this topic. The 'm6A' subgroup that I lead within the Brodersen lab now comprises 3 PhD students in addition to myself, and I have supervised a total of 4 MSc and 3 BSc students working on this line.

As a consequence of my excellent scientific production on m6A, I have been invited to give seminars at the Danish RNA Society club (Copenhagen) and the BaRNA club (Barcelona) in 2019, and at the University of Zurich next April. My abstracts have been selected for talks in international conferences as prestigious as The Epitranscriptome and the Annual Meeting on RNA of the RNA Society, and both my oral and poster presentations have been awarded with prizes. Today, I am one of the world experts in m6A in plants, having produced a substantial amount of all existing literature.

Finally, I have also coordinated collaborations with experts in different fields, some with groups at our same institute, but I have also established international collaborations either by hosting visiting researchers (e.g. Mireya Martínez-Pérez from Pallás group at the IBMCP), or through my own stays abroad. These exchanges have been an excellent opportunity to learn specialized techniques, experience different working environments, and establish tight bonds with top international researchers. Importantly, the results of these stays have been published in prestigious journals: Plant Cell in 2016 (Meister's lab, Germany) Development in 2020 (Østergaard's lab, JIC, UK), and eLife (Staiger's lab, Germany).

Área Temática:	**Biociencias y biotecnología**
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Título:	Exosomes and posttranslational modifications in immune, stem and cancer biology

Resumen de la Memoria:

I studied Biochemistry at the Universidad Autónoma de Madrid (UAM, Spain) and I received the Extraordinary Award of the Degree. During my degree project I worked on the transfer of miRNA-loaded exosomes during the Immune synapse, contributing to one of the first studies describing that functional miRNAs are transferred between cells (Mittelbrunn et al. Nat Commun 2011). I did a master's degree in Molecular Biomedicine at the UAM. During my master's project I worked on the transfer of exosomes between lymphocytes and endothelial cells during extravasation. In 2012 I obtained a FPU fellowship and started my PhD at the CNIC under the supervision of Dr. F. Sanchez-Madrid and Dra. M. Mittelbrunn. During the first years of my thesis I investigated the mechanisms that control the sorting of specific microRNAs into exosomes. We identified sequence motifs enriched in exosomal miRNAs (EXOmotifs), that allow their specific binding to hnRNPA2B1 protein, which loads them into exosomes. The results of this work were published in Nature Communications (Villarroya-Beltri et al. 2013) and lead to the development of a patent (P201231503). In 2014 I did stay at Cornell University in New York (USA), under the supervision of Dr. David Lyden and Dr. Héctor Peinado, during which I worked on the role of melanoma-secreted exosomes in lymph node metastasis. During the last years of my thesis I studied the role of the post-translational modification ISGylation in the secretion of exosomes, and we showed that ISG15 conjugation to MVB proteins induces their aggregation and degradation by the lysosome and therefore decreases the release of exosomes (Villarroya-Beltri et al. Nat Commun 2016). In 2016 I obtained my PhD in Biochemistry by the UAM with International and Cum Laude mentions. In 2018 I obtained a Juan de la Cierva fellowship and I joined Dr. M. Malumbres laboratory at the CNIO. During this first postdoc I studied the role of CDC14 phosphatases in mammals, and demonstrated that these proteins are dispensable for mitotic exit, but control ESCs differentiation through the dephosphorylation of the epigenetic regulator Utf1, which allows the proper expression of genes with bivalent promoters (Villarroya-Beltri et al. EMBO J 2023). During these years I also studied the case of a patient with germline mutations in the gene MAD1L1, which induces a novel syndrome of mosaic variegated aneuploidy (MVA) with systemic inflammation and unprecedented tumor susceptibility (Villarroya-Beltri et al. Sci Adv 2022). In 2022 I did a stay in Dr. A. Nussenzweig laboratory at the National Cancer Institute in Bethesda (USA) to learn the END-seq, a next-generation sequencing technique for quantitative mapping DNA double strand breaks at nucleotide resolution. In 2022 I received the Award for Outstanding Research by Postdoctoral Fellows from the CNIO. In 2023 I received a CNIO Friends fellowship and I joined Dr. M. Barbacid laboratory at the CNIO, where I investigate new therapies for the treatment of lung and pancreas cancer.

Resumen del Currículum Vitae:

I have 13 published articles, 12 of them within the Q1 of their category. I am first author of 9 of them and corresponding author of 1. I have 4020 cites and my h-index is 10. Summary of my publications:
- Villarroya-Beltri et al. EMBO J 2023
- Villarroya-Beltri et al. Sci Adv 2022
- Villarroya-Beltri et al. Cancer Res 2022
- Torralba et al. Nat Commun 2018
- Villarroya-Beltri et al. J Cell Sci 2017
- Villarroya-Beltri et al. Nat Commun 2016
- Baixauli et al. Cell Metab 2015
- Moreno-Gonzalo et al. Front Immunol 2014
- Villarroya-Beltri et al. Semin Cancer Biol 2014
- Villarroya-Beltri et al. Nat Commun 2013
- Gutierrez-Vazquez et al. Immunol Rev 2013
- Villarroya-Beltri et al. Methods Mol Biol 2013
- Mittelbrunn et al. Nat Commun 2011

I also have a patent (P201231503, 2012). I have directed 2 degree and 2 master projects. I have participated in several international projects, including ERC-2011-ADG_20110310, and scientific networks, such as GEIVEX, iDFFER and iLUNG. I have presented my work in several national and international congresses, and I have received an Award for the Best Oral Presentation in the ISEV annual meeting in Boston (USA, 2013). I have also received the Award for Outstanding Research by Postdoctoral Fellows from the CNIO (2022).

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática:	Biociencias y biotecnología
Nombre:	COVELO FERNÁNDEZ, ANA
Referencia:	RYC2022-035546-I
Correo Electrónico:	covelo.ana@gmail.com
Título:	Astrocyte involvement in brain physiology

Resumen de la Memoria:

I had the exceptional opportunity to develop my scientific career in top labs. First in Dr. Araque's lab, one of the leading labs on glia-neuron communication research, where I learned calcium imaging, electrophysioly, pharmacology, optogenetics and chemogenetics. The contributions to neuroscience I achieved in this lab include: 1) the first proof that endocannabinoids induce long-term synaptic potentiation by stimulating astrocytes (Cereb Cortex 2015); 2) the term "lateral synaptic regulation" which expanded the concept of the tripartite synapse (Neurosci 2016); 3) the proof that the electrophysiological methodology used is critical to properly assess synaptic changes (Front Cell Neurosci 2017); 4) the proof that astrocytes decode neuronal activity (eLife 2018); 5) the idea that inhibition may be different in neurons and astrocytes (Glia 2019); and 6) the proof that astrocytes are crucial regulators of the brain reward system (Neuron 2020). Additionally, through my collaborations with other laboratories I found 1) that a point mutation in alpha-synuclein (linked to familial Parkinson¿s disease) induces postsynaptic deficits (J Neurosci 2018); and 2) that astrocytes are novel contributors to the altered neuronal states observed in alpha-synucleinopathies (Acta Neuropathol, 2023).

Later, I joined Dr. Marsicano's lab, a multidisciplinary lab recognized worldwide for its research in cannabinoids. Here, I could complement my previous knowledge and technical expertise with novel genetic approaches and behavioral techniques. The contributions to neuroscience that I achieved in this lab include: 1) the first observation that astroglial cannabinoid receptors associated to mitochondria tightly regulate astrocyte calcium and synaptic integration (Cell reports 2021); and 2) the demonstration that astroglial cannabinoid receptors contribute to synaptic plasticity and amphetamine behavioral effects (submitted).

In summary, my scientific interest has been to elucidate the role of astrocytes in the physiology of the nervous system as processors of information, aiming at determining how they influence neuronal excitability, synaptic plasticity and behavior. My current research projects will focus on how astrocytes interact with the dopaminergic system in physiology and pathology:

1. Astrocyte role on reward processing: I aim to elucidate whether dopamine stimulates astrocytes in brain regions related to reward processing, how astrocytes regulate neuronal activity in these brain regions and what are their consequences in reward and motivation. Understanding how these brain regions are regulated is fundamental for understanding the physiological processes that underlie normal reward and aversion processing, but also for understanding pathological states, such as drug abuse and addiction.

2. Astrocyte role in alpha-synucleinopathies: I aim to elucidate the structural and physiological modifications that occur in astrocytes in mouse models of alpha-synucleinopathies. This research will shed light on astrocyte (dys)functions in these pathologies and may reveal novel therapeutic targets.

My unique expertise and track records evidence that I am ideally positioned to lead my fully independent research lines using interdisciplinary methodological approaches that will include electrophysiology, optogenetics, chemogenetics, imaging and behavioural technique.

Resumen del Currículum Vitae:

Bachelor degree in Biology (University of Vigo, 2009), Master in Biomedicine (University of Barcelona, 2010), PhD in Neuroscience (Universidad Autónoma de Madrid, 2015).

Master (2010): I completed my experimental part in the Dr. Kube's lab at the Georg-August University of Göttingen (Germany; Eurolife fellowship). My work studying how Burkitt¿s lymphoma cells migrate from the tumor resulted in a publication in which I am co-first author.

PhD student (2011-2015): Cajal Institute, CSIC (FPI fellowship) and University of Minnesota (supervisor: Dr. Araque). I studied the role of astrocytes in the endocannabinoid system and their participation in short- and long-term synaptic plasticity, resulting in 4 original papers (2 of them as first or co-first author) and 1 review. I obtained the PhD degree in Neuroscience with maximum honors.

Postdoctoral Researcher (2016-2019): University of Minnesota (supervisor: Dr. Araque). I investigated 1) the intracellular signaling pathways leading to gliotransmission and 2) how astrocytes participate in the brain reward system. My results led to 6 original papers (4 as first or co-first author) and 1 invited 'news and views article' (Cell).

Postdoctoral Researcher (2019-2023): NeuroCentre Magendie, Inserm (Funding from: IdEx, HFSP and Narsad; supervisor: Dr. Marsicano). I studied 1) the role of astroglial cannabinoid type 1 receptors (CB1Rs; mitochondrial vs plasma membrane) on astrocyte calcium and synaptic plasticity, 2) the role of astroglial CB1Rs in the brain reward system, and 3) how CB1Rs regulate the subunit composition of AMPA and NMDA receptors. The results obtained revealing the role of astroglial CB1Rs in long-term synaptic depression in the Nucleus Accumbens will be reported in a manuscript that has been recently submitted for publication and in which I am first and co-corresponding author. This stage resulted in the publication of 2 original papers and 1 review. Through my collaborations, I have also published 2 original papers (1 as last author, in press) and 1 review article, independently from Dr. Marsicano.

I have been awarded 3 projects as principal investigator from competitive national and international calls (333 596 €approx.): University of Bordeaux Investments for the Future program (France), Human Frontiers Science Program and Brain and Behavioral Research Foundation (USA).

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I have participated in 12 meetings, I was invited as a speaker in 7 symposiums, workshops and seminars and I was an invited professor for the class Fundamental Neuroscience 1001 (2017 and 2016) at the University of Minnesota.

I mentored 1 visiting high school student, 3 visiting PhD students and 1 visiting postdoc. I have co-supervised 1 master student and 2 PhD students.

The bibliographical analysis of my scientific contributions show 18 publications (excluding 1 manuscript currently in press), in which I am first (or co-first) author in 11 of them (3 of the publications authored by only 2 authors). I have been cited >1200 times. H-index: 12, mean IF:11.4

I act as a reviewer for specialized international journals, I had been invited to review a grant proposal for L' Agence Nationale de la Recherche (ANR, France) and I have been a member of a thesis committee at the University of Basque Country.

Área Temática:	Biociencias y biotecnología
Nombre:	GARCIA HEVIA, LORENA
Referencia:	RYC2022-035230-I
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Título:	Nanobiotecnología para el tratamiento del cáncer

Resumen de la Memoria:

During my PhD (2014-2016), I was working on carbon nanotubes biomedical applications showing the antitumoral properties of this nanomaterial both in vitro and in vivo, in a solid tumor model. I finished my PhD with 6 papers as the first author.

Then, I did my postdoctoral period abroad in 3 different Universities and Institutes for 4 years.

My first postdoctoral position (2016) was at the University of Oklahoma (USA), in the group of Professor Priyabrata Mukherjee. Here, I investigated the use of gold nanoparticles in ovarian cancer treatment.

Then, I got a position at International Nanotechnology Laboratory (2017). Here, working in the Nanomedicine Group, I develop smart theranostics nanoparticles for their use in cancer. I gained experience in synthesizing and characterizing magnetic and lipidic nanoparticles, drug encapsulation, magnetic hyperthermia (as a treatment) and Magnetic Resonance Imaging (as therapy). Furthermore, I established several collaborations and I published 9 articles during this period.

After two years and a half, I moved to Italy to develop my third postdoctoral position (2019), at the Biorobotics Institute (Pisa), in the Regenerative Technologies Laboratory. I was working on a European project Horizon 2020 about the use of nanocomposite materials in the treatment and ultrasound-mediated management of osteoarthritis.

I came back to Spain in 2020 after getting a "Sara Borrell" contract, to work at the Nanomedicine Group (IDIVAL) in the context of Valdecilla Hospital. I have been working on the functionalization of nanomaterials to target specific organs. I got my first project to produce a synthetic virus with nanobiotechnology, to investigate this virus without the need to use biological safety laboratory. As a result, we have developed a patent that is under evaluation.

Finally, I got the "Juan de la Cierva-Incorporación" contract (2021) to work as an independent researcher at the University of Cantabria. During this period, I got two high-level projects as PI. One of them is a multicentric project between 5 accredited Health Research Institutes for the treatment of cystic fibrosis using bacteriophages encapsulated in lipid nanoparticles. The other one is an Ecological and Digital transition project from MINECO. In this case, we are going to transform whey waste (with a high organic load) into carbon dots (CDots), bio-friendly high-added-value for biomedical uses (in imaging and therapy).

I would like to obtain the "Ramon y Cajal" contract to become an independent and consolidated researcher and develop my research line in the use of nanobiotechnology as a solution for biomedical problems. For this purpose, I want to take into account my previous background in the synthesis and validation of different nanomaterials (carbon nanotubes, solid-lipid, magnetic, and gold nanoparticles) in the treatment of cancer, but also go one step further in all of them, generating new knowledge and solving specific health problems in a clear and novel way. In this sense, the project that I would like to develop involves the use of smart nanostructured lipid carriers (a new generation of solid-lipid nanoparticles) for the treatment of Metastasis (the cause of 90% of cancer deaths).

Resumen del Currículum Vitae:

I am a Biologist (University of Oviedo, 2010) and have a Master's (2011) and a Ph.D. (2016) in Molecular Biology and Biomedicine both at the University of Cantabria (UC). During my thesis I specialized in the field of nanomedicine applied to cancer, I published 7 high-impact articles, 6 as the first author. My doctoral thesis received the "Premio Extraordinario" and the "Premio Juan María Parés" as the best doctoral thesis in Health Sciences of the UC.

I continued my specialization in nanomedicine in 3 different institutes in Europe and USA. In 2016 I moved to the Stephenson Cancer Center at the University of Oklahoma, where I investigated the use of gold nanoparticles in cancer. In 2017, I got a position at one of the most prestigious international centers in Europe focused on nanoscience and nanotechnology, The International Nanotechnology Laboratory (INL), in Braga (Portugal). My research focused on the development and validation of magnetic nanostructures and solid lipid nanoparticles for cancer treatment. Two years later, in 2019, I moved to The Biorobotics Institute (Pisa, Italy) to work on a European project on regenerative medicine and biomaterials. After this international experience, in 2020 I obtained one of the renowned "Sara Borrell" fellowships that I enjoyed until 2022 when I finally obtained a highly competitive Juan de la Cierva Incorporación postdoctoral contract to work as an independent researcher at the University of Cantabria. My international vision has opened numerous collaborations that have helped me to participate in different European international COST Action networks and that have enabled me to continue traveling on short stays to different laboratories at the international level and co-chairing the organizing committee of the Nanomaterial Apply to live Science Congress (NALS 2022). Recently, I did a short-term scientific mission (2 months) at the University of Oporto to be familiar with liposomes and nanostructured lipid carriers.

Currently, I lead three projects:
- PI of a Network project (5 Accredited Health Research Institutes involved - Mutua Madrileña 2022)
- Co-PI of a Green and digital transition project (funded by Ministerio de Ciencia e Innovación, 2022)
- PI of Project about COVID-19 diagnosis making use of nanotechnology (IDIVAL, 2020).
I was working on more than 10 national and International projects.
I am accredited as "Profesor contratado doctor" since 2018. I have supervised:
- 1 PhD thesis (Programme: Molecular Biology and Biomedicine)
- 2 Master final project (Master in Molecular Biology and Biomedicine)
- 5 Degree final project (Degree in Medicine)
She is a member of: Spanish Association for Cancer Research; European Association for Cancer Research; Controlled Release Society and Research Network "NANOMED Spain".
She participates in different dissemination activities such as "International day of women in science", "CONOCELAS", "European Research Nigth", etc.
She has 29 publications, h-index: 13, and 490 cites (Google schoolar).

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Turno General

Área Temática:	**Biomedicina**
Nombre:	CORDERO MUÑOZ, HECTOR
Referencia:	RYC2022-036797-I
Correo Electrónico:	cordero@um.es
Título:	Antibody response of B cells in health and disease

Resumen de la Memoria:

The applicant started his career working in fish immunology and nutrition, continued with human immunology and antibody response to food antigens, and wants to continue now with immunology and tolerance and allergy.

The importance of this research is that by the age of 2, virtually all children develop IgG antibodies to common food antigens, including known allergens. For most, these antibody responses are not pathogenic, and tolerance is the outcome (Schwarz et al., 2016). Still, about 10% of children will experience allergic reactions to some of these antigens. However, the physiological implication of such robust and universal serological immunity to dietary antigens and what drives the mechanisms between tolerance and allergy are currently unknown.

Contrary to classic studies, the serum titers of these IgG antibodies rise after birth and during the first two years of life, supporting a local production in addition to maternal transference. My preliminary data show that newborns are already born with plasma cells in the thymus (Cordero et al., 2021, 2023). This organ is responsible for generating thymic IgG antibody-secreting cells against food antigens in infants.

The main goal of my research is to understand the development, mechanisms of antibody production, and immune complexity network that drives the B cell response against food antigens and how this diverse antibody response is linked with the tolerance/allergy axis in human infants. By applying single-cell RNA sequencing technologies, I elucidate the different sources of specific antibodies against food antigens behind the thymus. My studies will help to develop a route map to prevent allergies through therapeutical applications early in life.

Furthermore, the power, novelty, and applicability of these sequencing techniques could be implemented in other areas of research at the destination center, where the applicant aims to establish a multidisciplinary collaboration.

References:
1. Schwarz, A et al. 2016. IgG and IgG4 to 91 allergenic molecules in early childhood by route of exposure and current and future IgE sensitization: Results from the Multicentre Allergy Study birth cohort. J. Allergy Clin. Immunol. 138, 1426-1433 (2016).
2. Cordero, H et al. 2023. Antibody response to dietary antigens elicits specific plasma cells in the infant thymus. Journal of Allergy and Clinical Investigation, in press.
3. Cordero, H et al. 2021. Intrathymic differentiation of natural antibody-producing plasma cells in human neonates. Nat. Commun. 12, 5761.

Resumen del Currículum Vitae:

Dr. Hector Cordero is an Associate Research Scientist working at Columbia University Medical Center, where he carried out his career as a forefront immunologist applying next-generation technologies to address particular questions in the field of B cells and elucidate the mechanisms behind particular disorders such as diseases and allergies. During his postdoctoral studies, he has generated new ideas and hypotheses, written grants, and collaborated with other departments with his knowledge and skills, as proven by his publications in different fields of medical sciences.

Since the beginning of his career as a PhD student with an FPI fellowship, the applicant has published 31 articles, all in Q1 scientific journals. A similar number of works have been presented to international conferences. The dissemination of his results and the importance of his publications can be evaluated by the citation indexes. His H-index is 20, and his i10-index is 27.

His thesis defense was evaluated Cum Laude and the "International Mention", performing part the Doctoral Thesis at Nord University in Norway (2016) under the supervision of Dr. Monica Brinchmann to learn and apply proteomics to my experiments and at the University of New Mexico (2015) in USA under the supervision of Dr. Irene Salinas to study the interaction between mucosal immunoglobulins and microbiota components. In both international stays, the applicant has published articles with their external mentors.

Furthermore, Dr. Hector Cordero got the best doctorate award at the University of Murcia in 2017 for the number and quality of their science in the field of fish immunology. He also participated in a Lifelong Learning Programme with an Erasmus grant from the University of Murcia to carry out a research stay at the University of Nordland (2014).

Dr. Hector Cordero is a member of international associations in the field of immunology. In addition, he has participated in conferences where the excellence of his work has been recognized with podium and poster awards by the American Association of Immunologists (AAI) and the Federation of Clinical Immunology Societies (FOCIS).

Dr. Hector Cordero has been the mentor of international bachelor students and master students, providing guidelines on their research programs at the University of Murcia and at Columbia University, respectively. Some of them, such as Ronzon Shihab and Jacob Hess (master students and contributors in my last article), are enrolled now in PhD programs for developing a career in science.

The applicant has served as an editor and reviewer in more than 12 scientific journals, not only in the field of immunology but also in other biological areas such as transplant, neurosciences or toxicology. Dr. Hector Cordero has organized a Research Topic and published an editorial article to summarize the advances in B cell immunology at single-cell resolution, an emerging study area in recent years.

Dr. Hector Cordero also has teaching experience, as he is accredited by the ANECA for PAD, PCD, and PUP. Overall, the applicant demonstrated the motivation, talent, and leadership to start his own laboratory. Their unique skills make him a good collaborator for other scientists from organizations and end-users of research in the same and complementary fields of medical sciences.

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Turno General

Área Temática:	**Biomedicina**
Nombre:	RODRÍGUEZ VARGAS, JOSÉ MANUEL
Referencia:	RYC2022-037617-I
Correo Electrónico:	jmrodriguez@ipb.csic.es
Título:	Mitochondrial Dysfunction during hypoxia: consequences in neuronal cell death and neurodegeneration

Resumen de la Memoria:

Master¿s Degree and PhD Period: My multidisplinary background in cell and molecular biology began in 2005 when I got my Degree in Biochemistry at University of Granada. In 2007, I enrolled in an international Official Master`s in the field of health sciences, entitled Research and Advances in Molecular and Cellular Immunology UGR M26/56/1. I performed my Master Degree at the Dr. Francisco Javier Oliver Pozo's laboratory (Institute of Parasitology and Biomedicine "López-Neyra" (IPBLN-CSIC, Granada)). In January 2008, I was awarded a pre-doctoral JAE i3p fellowship by The Spanish National Research Council (CSIC), I joined Dr. Oliver's laboratory. As a PhD student I studied in depth the implications of PARP-1 (main genome guardian) and Poly ADP-ribosylation reaction (PARylation) in starvation-induced autophagy in cancer; in collaboration with Dr. Abelardo López-Rivas (CABIMER, Seville) and Professor Laszlo Virag (University of Debrecen, Hungary). In 2009 I obtained a mobility fellowship by CSIC JAE i3p Program and I spent 3 months working at Professor Marja Jäättelä (Danish Cancer Society, Copenhagen, Denmark), analyzing the kinases cascade AMPk-mTORC1-ULK1 during starvation in absence of PARP-1-dependent Poly ADP-ribosylation. All my results stablished a model for the fine regulation by PARylation of the key initial steps of autophagosomes formation in cancer cells. (1 Q1 / 1 D1 first-author publications and contributed to other work, 1 Q1 publication). Postdoctoral stage: In 2014 I was awarded an EMBO Short-Term Postdoctoral Fellowship for 3 months to complete my project in Dr. Francoise Dantzer's lab (École Supérieure de Biotechnologie de Strasbourg, France), returning for 9 months as postdoc researcher under the supervision of Dr. Oliver; characterizing a key nuclear population of AMPk1α kinase targeted and Poly ADP-ribosylated by PARP-1 during nutrient deprivation in breast cancer cells (1 Q1 first-author publication). In 2015, I received a 2-years postdoc fellowship from the Ramón Areces Foundation at the Dr. Francoise Dantzer's lab, and then in 2017, I have benefited from a 2,5-years postdoc contract from the University of Strasbourg Institute for Advanced Study, (USIAS Foundation). There, I worked as main postdoc researcher in 2 independent projects; first of all, I described a model of synthetic lethality by PARP-3 inhibition in BRCA1 mutant TNBC cells, and secondly I co-supervised my own research project with Dr. Dantzer and the Professor Magnar Björas (Faculty of Medicine and Health Sciences, NTNU, Norway), focused in the active role of PARP-3 in adult neurogenesis in response to hypoxia ischemia (1 Q1/ 1 D1 first-author publications). Moreover, I contributed to other project on EMT/DNA Damage (1 Q2 second-author publication). Current Stage. Ongoing and Future: In May 2020, I returned to the IPBLN-CSIC, Granada, through the Juan de la Cierva-Incorporación Program, stablishing my own independent project in mitochondria metabolism in cancer (1 Q1 first/corresponding-author publication) and secondly in neurological models during hypoxia; evaluating the tight regulation of mitochondria dynamics and functions by HIF-1α transcription factor. My current project in hypoxia will allow to characterize new mitochondrial targets as a new therapeutic approach in mitochondria-derived neurological disorders such as Alzheimer and Leigh Syndrome

Resumen del Currículum Vitae:

My research activity began with my Doctoral Thesis at the Institute of Parasitology and Biomedicine López-Neyra IPBLN-CSIC - University of Granada. In January 2008, I was awarded a pre-doctoral JAE i3p fellowship by The Spanish National Research Council (CSIC), I joined Dr. Francisco Javier Oliver Pozo's laboratory. As a PhD student I studied in depth the implications of PARP-1 (main genome guardian) and Poly ADP-ribosylation reaction (PARylation) in starvation-induced autophagy in cancer. After completing my PhD (Cum Laude University of Granada) in 2014, I obtained an EMBO Short-term Fellowship to carry out a 3-month postdoctoral stay in the laboratory of Dr. Francoise Dantzer at the École Supérieure of Biotechnologie of Strasbourg (UMR7242, ESBS-UNISTRA, France), where I described the molecular mechanism by which PARP-1 is able to modulate the activation of the AMPk / ULK1 pathway (cellular energy sensor and precursor of the autophagy) and the inactivation of the mTORC1 complex (cellular nutritional sensor and the main negative modulator of autophagy). As a result of this stay and in addition to my predoctoral work, 3 articles were published (first author) in high impact journals: Autophagy (Q1, 2009), Cell Research (D1, 2012) and Cell Death and Differentiation (D1, 2016). In 2015, I received a postdoctoral fellowship from the Ramón Areces Foundation (Call 2015-2017) to begin my long-term postdoctoral work in Dr. Dantzer's laboratory. During these two years, my work focused on the role of PARP-3 in tumor progression and the EMT differentiation processes, which reflected in a publication in Oncotarget (Q2, 2016). From October 2017 to January 2020, I have benefited from a postdoctoral contract from the University of Strasbourg (USIAS PROGRAM). Our studies have shown that PARP-3 can be used in a synthetic lethality model in triple negative breast cancer cell lines which are mutant for BRCA1 (BRCA1mut TNBCs), this work was published in Cell Death and Differentiation (First Author) (D1, 2018). At the same time, we developed a new line of study focuses on the role of PARP-3 in neurogenesis under basal conditions and stress by hypoxia ischemia in the brain (collaboration with Professor Magnar Björas (NTNU - Norway)). All our data demonstrated the active role of PARP-3 in the differentiation of astrocytes and neurons during stress situations. These results were published in Cell Death and Disease (First Author) (Q1, 2020). In May 2020 I was awarded with a Juan de la Cierva - Incorporación contract to get back to the tumor biology group of Dr. Francisco Javier Oliver Pozo (IPBLN-CSIC). I was allowed on the one hand to evaluate the impact of PARP inhibitor treatment on glioblastoma (GBM) progression. We have demonstrated that treatment with a new generation of PARP inhibitors promotes an adaptive pathway in GBM, based on the mobilization and consumption of lipids through the autophagy pathway (lipophagy) (Cancers, 2022, Q1, Corresponding Author). My current project is focused on the future therapeutic of HIF factors in the treatment and knowledge of Mitochondria Diseases (Mitochondrial myopathy, Leber's Hereditary Optic Neuropathy (LHON) or Leigh Syndrome); for which there are no effective treatments, except preventive medicine.

Área Temática:	**Biomedicina**
Nombre:	HERRERO MIER, ANA
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Título:	Understanding the complexity of RAS-ERK pathway regulation: RNA as a new binding partner

Resumen de la Memoria:

My interest in cancer research began during the final year of my BSc in Biochemistry at UAM when I was awarded a collaborative fellowship. I joined Dr. Calvo's lab at IBB-CSIC for carrying out a small project on the characterization of GADD45c regulation via HDAC activity. This experience propelled my interest on cancer and made my clear decision to start a scientific path.

I joined Prof. Crespo's group at the UC-CSIC with the aim of being specialized in cancer signaling. I worked on the "Ras spatio-temporal regulation related to carcinogenesis" project to study ERK activation by RAS pathway from different sublocalization, as part of my thesis. Also, I worked on the study of the pharmacological disruption of ERK dimers as regulatory mechanism of tumor progression, for the discovery of a new possible treatment in colorectal and melanoma cancer.

In 2013, I got a position as postdoctoral fellow in SBI under the supervision of Prof. Kolch for enhancing my knowledge on signal-transduction networks related to cancer. I investigated Ras subcellular localization as a mechanism of cellular responses regulation. We integrated different OMICs techniques with an approach combining molecular techniques and systems biology. This allowed me to gain experience in proteomics and to collaborate with bioinformaticians.

In 2016, I undertook a second postdoc in Prof. Frame's lab, that is a world-class cancer research group with exhaustive experience of studying adhesion complexes and cancer-related processes such as migration and invasion. I got the training and the knowledge about adhesion proteins by applying a multidisciplinary approach based on start-of-the-art techniques.

In 2018, I got a Juan de la Cierva-Incorporación fellowship to work at Crespo's lab with the project "Understanding the complexity of Ras-ERK pathway regulation: RNA as a new binding partner". This served to settle the bases of my own research line.

My principal investigation line aims to characterize new mechanisms on RAS-ERK signaling regulation with the purpose of finding new therapeutical strategies to treat metastatic melanoma. By applying my acquired knowledge and my expertise on biochemical and biological methodology, I study how the RAS-ERK pathway is regulated by ncRNA interaction in cancer cells. Newly, I have identified the lncRNA FP236383.4 (FP) as binding partner of MEK, affecting its kinase activity with final biological consequences. Interestingly, the overexpression of FP correlates with, and increases p-ERK levels. The outcome of such regulation results in regulation of proliferation, migration and invasion in melanoma cells. Moreover, it seems that the overexpression of FP is somehow linked with drug resistance to RAF/MEK inhibitors. All these results make the interaction between MEK and FP very interesting to be deeper studied as therapeutic target. To carry out this project I will apply a multidisciplinary approach by integrating different OMICs (interactome, proteome, RPPA and RNAseq), biochemical techniques (IP, CLIP and PTM analysis), study of biological readouts (proliferation, invasion and cytoskeleton changes) and development of mathematical models to help on the inference of RAS-ERK pathway regulation. Altogether will bring closer the finding of new compounds to disrupt the MEK-FP interaction and regulate RAS-ERK dependent tumorigenesis and metastasis.

Resumen del Currículum Vitae:

While finishing my undergraduate degree in Biochemistry, I was awarded a collaborative scholarship from Ministerio de Educación y Ciencia to join Dr. Calvo's group at IIB-CSIC. The work that I carried out there led to a publication as second author in Oncogene.

After that, I joint Prof. Crespo's group at Univ. de Cantabria-CSIC for obtaining the PhD in Biomedicine and Molecular Biology. For that, I was awarded the predoctoral fellowship Formación de Profesorado Universitario (FPU) from the Ministerio de Educación y Ciencia. In addition to my thesis work, I also participated in different projects from the lab that were published in specialized journals such as Molecular Biology of the Cell (first author), Molecular and Cellular Biology (second author) and Cancer Cell (first author). Indeed, this last publication was selected for the Preview article in the same issue of the journal, the editor¿s comments for Nat. Revs. Cancer, Cancer Discov., and Science Sign. Moreover, some of the data obtained from my work served for the design of other research projects and formulation of a patent. During this time, and as part of my FPU fellowship, I was admitted for a short internship in an international center, Systems Biology Ireland that gave the opportunity to come back after finishing my PhD.

During my first postdoctoral position at SBI, I was collaboratively working in a main research project on the study of RAS signalling, from which I published two papers as first author in Cell Reports and Small GTPases. Moreover, some internal collaborations led to publications in other specialized journals such as PlosOne and two others in Cell Report. With my work at SBI, I participated and contributed to European funded programmes (EU-FP7-HEALTH) such as ASSET and PRIMES.

During my second postdoctoral position at Edinburgh Cancer Research Center (ECRC-CRUK), I worked on the characterization of nuclear roles of adhesion proteins. Part of my work in ECRC has been recently published in Nature Communications in which I am second joint author, and the other part is being prepared to be published soon. Moreover, collaborative work led to publication of other article in Science Reports. During my time at Prof. Frame¿s lab, I worked for the Programme Grant-CRUK and I was also involved in the preparation of the Programme Grant Renewal which is part of the current funding of her group.

In 2018, I was awarded a Juan de la Cierva-Incorporación fellowship and joined Prof. Crespo¿s group under the investigation line "Development of antitumoral drugs targeting protein-protein interactions in the RAS-ERK pathway" with a new concept of tackling the study of RAS-ERK signalling pathway in cancer. Beside the work performed to settle bases of my own research line, I also participate in other projects in the group such as the recently publication in Science Advances.

During my career, I have actively participated in national and international congress/conferences, as well as divulgation activities. I am committed to train and form young researchers, as well as evaluating their progress during their thesis. I am co-director of a PhD, whose work is in line with my principal research line. Moreover, I have published bibliographic reviews as first and last authors in journals such as Biomolecules, Genes, Biochemical Society Transactions and Critical Reviews in Oncogenesis.

Área Temática:	**Biomedicina**
Nombre:	ÁLVAREZ PRADO, ÁNGEL FRANCISCO
Referencia:	RYC2022-036287-I
Correo Electrónico:	angel.alvarez@protonmail.com
Título:	Immuno-oncology: exploring the molecular mechanisms of oncogenesis and exploiting the immune system to fight cancer

Resumen de la Memoria:

My research interests lie at the intersection of molecular immunology and cancer biology. My PhD work at Prof. Ramiro' s lab (CNIC, Spain) shed light on the mechanisms that govern the specificity of AID, a key enzyme for the B cell adaptive response that is also at the origin of many B cell lymphomas (Álvarez-Prado et al. J Exp Med, 2018; highlighted by the journal; 53 citations). During my PhD I also published 8 other co-author papers in top-tier journals working on understanding the epigenetic regulation of the germinal center reaction; exploring the contribution of AID to lymphoma- and leukemogenesis; targeting micro-RNAs to treat B cell lymphomas and characterizing a T-cell immunodeficiency.

In 2019, I joined the laboratory of Prof. Joyce (UNIL, Switzerland), a world leader in the field of cancer immunology, as a postdoctoral researcher. Since then, my work has focused on exploring and exploiting the tumor immune microenvironment (TIME) of brain primary and metastatic (BrM) tumors to identify and validate new therapeutic targets against these deadly cancers. I started two new research lines in the lab and participated in the setup of an experimental pipeline for multifactorial analysis of human brain cancer samples (Maas et al., Nat Prot, 2021); and in the investigation of the role of neutrophils in brain cancers (Maas et al, under revision). My first line of research examined how cancer cells sculpt their microenvironment in human BrMs and revealed that specific genetic drivers correlate with distinct immune compositions and phenotypes in the TIME (Álvarez-Prado et al., Cell Rep Med, 2023). These findings will enable the development of personalized immunotherapies informed by the genomic profile of the tumors. The second project I am leading concentrates on exploiting the host immune system to fight glioblastomas, the most frequent form of primary brain cancer. My results showed that targeting an innate immunity checkpoint in immunocompetent pre-clinical mouse models of glioblastoma leads to delayed tumor growth and extended survival, opening new perspectives for the treatment of these currently incurable tumors (Álvarez-Prado et al., manuscript in preparation).

My successful research to date shows both my ability and independence as a researcher, as well as my attitude towards collaboration and networking. The quality of my work has also been recognized by several awarded fellowships/grants as a BSc (MEC, AECC, CSIC), MSc (MEC, Fundación Ramón Areces) and PhD student (EMBO); and later as a Postdoctoral Fellow (EMBO, MSCA, The Brain Tumor Charity). I have actively participated in 16 international meetings and 13 manuscript revisions, which enhanced my critical interpretation of science and contributed to establish and expand a solid network of collaborators. I am currently co-directing a doctoral thesis and supervising a MSc and PhD student; and I have also tutored 2 MSc students that have successfully moved into PhD programs or pharma industry in the past.

My goal is to become a group leader in the field of cancer immunology. The objectives of my research program are: (i) to decode the impact of germline and somatic variation on anti-tumor immunity and immunotherapy efficacy in brain primary and metastatic tumors; (ii) to exploit innate immune nucleic acid sensing pathways as a novel approach to prevent and treat brain metastasis.

Resumen del Currículum Vitae:

Education

2018   PhD in Molecular Biosciences (summa cum laude) - Universidad Autónoma de Madrid, Spain.

2013   MSc in Molecular Biomedicine - Universidad Autónoma de Madrid, Spain.

2012   BSc in Biotechnology - Universidad de Salamanca, Spain.

Current position

2019 —   Junior Lecturer / Postdoctoral Fellow, Johanna Joyce lab, University of   Lausanne (Switzerland).

Previous appointments

2018 – 2019   Postdoctoral researcher, Almudena Ramiro lab, CNIC, Madrid (Spain)

2013 – 2018   Pre-doctoral researcher, Almudena Ramiro lab, CNIC, Madrid (Spain)

2012 – 2013   Research assistant, Almudena Ramiro lab, CNIC, Madrid (Spain)

2011 – 2012   Research Intern, Dpt. of Computer Science, Universidad de Salamanca   (Spain). Supported by " Beca de Colaboración" M. de Educación y Ciencia, Spain.

2011 – 2012   Research Intern, Alberto Orfao lab, CIC, Salamanca (Spain).
Supported by Asociación Española Contra el Cáncer (AECC) (Spain).

2010 – 2010   Research Intern, Juan Sanjuan lab, EEZ/CSIC, Granada (Spain).
Supported by "Beca de Introducción a la investigación" (JAE-Intro), CSIC (Spain).

Peer-reviewed articles

1. Álvarez-Prado et al. Cell Rep Med, 2023; 4,100900 (Position: 1/13)
2. Álvarez-Prado et al. J Exp Med, 2018; 215(3):761-771 (Position: 1/7)
3. Delgado et al. PLoS Gen, 2020; 16(12):e1008960 (Position: 2/12)
4. Maas et al. Nat Prot, 2021; 16(10):4692-472 (Position: 8/13)
5. Català-Moll et al. Nucl Acids Res, 2021; 49(9):5057-5073 (Position 7/25)
6. Baliñas-Gavira et al. Leukemia, 2020; 34(10):2722-2735 (Position: 6/14)
7. Rodríguez-Hernández et al. Nat Comm, 2019; 10(1):5563 (Position: 5/26)
8. Pérez-García et al. Nat Comm, 2017; 8:16067 (Position: 3/6)
9. Bartolomé-Izquierdo et al. Blood, 2017; 129(17):2408-2419 (Position: 3/8)
10. Marin et al. J All Clin Imm, 2017; 139(1):347-349 (Position: 9/23)
11. Manzano-Román et al, J Prot Res, 2012; 11,12,5972-5982 (Position: 5/9)

Research projects as Principal Investigator

2022   The Brain Tumor Charity (UK) | Future Leaders Program (FLP).

The FLP is a very competitive (only 6 grants are awarded world-wide) three-stage   program supporting promising researchers from their postdoctoral stage to their establishment as senior group leaders. This international award not only recognizes my potential to become a group leader, but also opens the possibility to access to additional rounds of funding to support my transition towards independence.

2020   European Comission | Marie Skłodowska-Curie Individual Fellowship (evaluation: 99/100, ranked top 0.3% out of 1753 proposals).

2019   EMBO | Long-term postdoctoral fellowship (selected among 1189 applicants)

Selected presentations at international conferences

2022   Cell symposia: Hallmarks of Cancer. San Diego, CA, USA. Poster communication.

2019   EMBL/EBI: Bioinformatics for Immunologists, Cambridge, UK. Poster communication.

2018   Deaminet: DNA/RNA editing by AID and Apobec proteins. Jerusalem, Israel. Oral   presentation.

2017   EMBO: Bioinformatics and genome analysis. Thessaloniki, Greece. Poster and oral communication.

2016   Keystone Symposia: B cells at the intersection of innate and adaptive immunity. Stockholm, Sweden. Poster communication.

2014   CNIC PhDay: towards leadership development in science. Madrid, Spain. Poster communication and oral presentation.

2014   EMBL/EBI: Introduction to next-generation sequencing. Cambdridge, UK. Poster   communication.

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática:	**Ciencias agrarias y agroalimentarias**
Nombre:	ROMANI PEREZ, MARINA
Referencia:	RYC2022-037603-I
Correo Electrónico:	marinaromaniperez@gmail.com
Título:	Gut-brain axis modulation for improving metabolic health

Resumen de la Memoria:

Dr. Romaní is graduated Biology (2007) at University of Santiago de Compostela. In 2014, she received her PhD degree in Endocrinology by the University of Vigo with a "cum laude" distinction. From 2014 to 2016 the candidate conducted her Postdoc research funded by AgreenSkills, Marie Sklodowska-Curie (MSCA) actions (2014-2016) in Nutrition and Integrative Neurobiology group at Institut National de la Recherche Agronomique (INRA, Bordeaux France). In 2017, she joined to Instituto de Agroquímica y Tecnología de Alimentos IATA-CSIC (Valencia, Spain) to participate in the EU 7FP funded MyNewGut project. In 2018 she got a MSCA individual fellowship conducted in IATA-CSIC to initiate a new research line.

Since the applicant completed her doctorate, she has gained multidisciplinary scientific background in Endocrinology, Neurobiology, Immunology and Microbiology and she has acquired a strong competence in translational research. She has developed an international research with collaborations with different top-high research institutions in Spain, France, United Kingdom, Belgium, Germany, Ireland, Italy, Canada, Netherlands, Denmark, Argentina. By conducting preclinical trials, she has importantly contributed to address clinical aspects of endocrine pathologies and metabolic disturbances by performing research in the following 3 areas:

(i) as PhD student in UVigo she has contribute to advance in the clinical applicability of the gut hormone GLP-1 beyond its benefits on glucose homeostasis providing scientific evidence through preclinical trials suggesting new potential GLP-1-based alternatives for the clinical management of pulmonary pathologies or reproductive dysfunctions

(ii) as Postdoctoral researcher in INRA (Bordeaux, France) she has identified new early-life risk factors for the development of obesity at adulthood (early life stress induced by maternal separation and intake of hypercaloric diet in gestation and lactation) contributing to better design preventable strategies for this disease.

(iii) as Posdoctoral researcher in IATA-CSIC (Valencia) she has importantly contributed to advance in the clinical applicability of microbiome-based strategies to combat obesity, mainly by identifying next generation of probiotics

Long-term objective of her scientific career is establishing her own research line to study the gut microbiota rhythms dependent on food intake patterns as a tool to design chrononutrition strategies based on key interactions between ingested food and gut bacteria capable of amplifying the biorhythms of the neuroendocrine signals of the gut-brain axis. The clinical applicability of this general research line includes the prevention and/or precise and non-invasive treatment of energy metabolism disorders including those associated with obesity and other energy deficit and appetite loss disorders.

Resumen del Currículum Vitae:

Long-term objective of her scientific career is establishing her own research line to study the gut microbiota rhythms dependent on food intake patterns as a tool to design chrononutrition strategies based on key interactions between ingested food and gut bacteria capable of amplifying the biorhythms of the neuroendocrine signals of the gut-brain axis. The clinical applicability of this general research line includes the prevention and/or precise and non-invasive treatment of energy metabolism disorders including those associated with obesity and other energy deficit and appetite loss disorders.

Resumen del curriculum 3400 caracteres

Dr. Romaní obtained her degree in Biology at University of Santiago de Compostela in 2007. She got 2 merit-based fellowships to obtain the postgraduate diploma in Endocrinology at UVigo (2009). She was awarded a FPU fellowship for conducting her PhD, under the supervision of Prof. Federico Mallo. As a PhD student, she did 2 stays at IIBM (CSIC-UAM, Madrid) and at German Institute of Human Nutrition (Dife, Germany). In 2014, she received her PhD degree by UVigo with cum laude distinction. In this period, she performed translational research providing new GLP-1-based alternatives for the clinical management of pulmonary pathologies or reproductive dysfunctions. In 2014, she was awarded a 2 years-EU-funded International Mobility Fellowship (AgreenSkills, Marie Sklodowska-Curie actions, MSCA) to join to Nutrition and Integrative Neurobiology group at INRA (Bordeaux FRANCE). She conducted long-term preclinical trials to explore the role of early-life stress and hypercaloric diet as risk factors for obesity. Here, she acquired a multidisciplinary background integrating knowledge in neuroscience, immunity, endocrinology and metabolism. In 2017, she joined to IATA-CSIC (Valencia) to participate in 7FP-EU MyNewGut project to study the Microbiome Influence on Energy Balance and Brain Development. She demonstrated immune-mediated mechanisms underlying the mode of action of 2 novel human intestinal bacteria helping to advance in their clinical applicability as next generation of probiotics for obesity. In 2018, she got a MSCA IF to initiate a new research line exploring the influence of gut microbiome on the vagal control of energy homeostasis. She identified a novel human intestinal bacteria specie capable of enhancing the intestinal GLP-1 neural signaling to improve glucose homeostasis highlighting its clinical use as next generation of probiotic for T2D. From 2021 she is the PI of a project financed by IATA-CSIC for using intestinal organoids to design new microbiome-based strategies for T2D. She has competence in technology transfer (COMTE-EBT) and she is co-inventor of 2 patents for the use of identified human intestinal bacterial to improve metabolic health. She has participated in 13 public financed projects: European (3), National (5), and Autonomic (Xunta de Galicia, 3) entities, and French government (1, ANR IBISS) and CSIC (1). From these, she was/is PI of 2 projects. She is participating in a company private project. She was supervisor of 2 PhD theses (1 ongoing), 1 Master and 4 undergraduate students. Also she has teaching experience in degree courses. Her research was communicated in 46 to international/national conferences (5 contributions as oral presentations and 10 as invited speaker) receiving 6 prize awards. She was involved in multiple dissemination activities for non-scientific audience. Her s

Área Temática:	**Ciencias agrarias y agroalimentarias**
Nombre:	ESPIGARES PUERTO, FELIPE
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Correo Electrónico:	felipe.espigares@gmail.com
Título:	Behavioral neuroscience in fish

Resumen de la Memoria:

In 2015, I completed my doctoral degree at the Torre la Sal Institute of Aquaculture (IATS-CSIC, Spain). My PhD focused on the study of neural mechanisms controlling physiological functions in fish, with a special emphasis on the characterization of the molecular and neuroendocrine mechanisms triggered by different neuropeptides (e.g. kisspeptin, GnRH). For my first Postdoctoral role, I joined Prof. Rui Oliveira' s laboratory (Gulbenkian Science Institute, Portugal) to integrate my background in fish physiology in a behavioral approach and test the idea that inter-individual differences in cognitive bias parallel inter-individual variation in stress responses and hence susceptibility to disease. There, I developed a novel behavioral test to phenotype zebrafish in an optimistic/pessimistic dimension (judgment bias test). I also showed that individuals with constitutive shorter telomeres have pessimistic behaviors, thus demonstrating for the first time in a vertebrate model a genetic basis of judgement bias. In 2019, I joined Prof. Koichi Kawakami' s laboratory (National Institute of Genetics, Japan), where I developed a transgenic zebrafish in which c-fos active neurons are genetically labelled. This has proved to be a highly useful tool to dissect precisely functional brain circuits in zebrafish. I also generated and characterized tac3b mutant zebrafish using the CRISPR/Cas9 genome-editing technology. Altogether, my scientific trajectory has given me the opportunity to acquire several important skills in the field of fish physiology, neuroendocrinology and behavior which, combined with the recently acquired experience in studying complex and challenging aspects of molecular genetics, ideally equip me for the design of cutting-edge research projects on behavioral neuroscience. Indeed, I have become strongly interested in using my knowledge on these subjects to help to improve welfare in captive fish. I' m particularly interested in studying the interaction between social and feeding behaviors at a mechanistic level, since the occurrence of disruptive mechanisms at the intersection of these behaviors have been reported to diminish fish welfare. For instance, aggressive interactions during feeding are a major cause of injuries in fish. However, the molecular and neural mechanisms underlying such bidirectional communication between the social and energetic neuromodulatory systems remains largely unexplored. Within this framework, my future line of research firstly aims to identify and characterize the social brain network of the zebrafish by identifying neural substrates of specific building blocks of social competence. Secondly, I aim to unravel the mechanisms underlying interactions between the social and energetic brains as well as its behavioral consequences. To this purpose, I propose a multidisciplinary perspective that combine behavioral, neural, genetic, and physiological sciences (by combining scientific skills and methodologies that I have acquired during my scientific career) using zebrafish (Danio rerio) as research model, which is expected to meaningfully explain welfare-related problems in captive fish.

Resumen del Currículum Vitae:

In 2009, I was awarded a prestigious competency-based Predoctoral Fellowship (CSIC-JAE-Predoc), which enabled me to work in the field of fish neuroendocrinology at the Torre la Sal Institute of Aquaculture (IATS-CSIC, Spain). My PhD focused on the characterization of the molecular and neuroendocrine mechanisms triggered by kisspeptins in the brain of European sea bass (Dicentrarchus labrax) in relation to puberty and fertility, under the supervision of Prof. Silvia Zanuy. During this period, I expanded my skills with a wide variety of scientific techniques used in fish neuroendocrinology and physiology. In 2012, I was awarded a competency-based Mobility Fellowship (Short-term Stay Fellowship JAE Predoc), following which I transferred to the Department of Neurogenesis and Oestrogens (Université de Rennes 1, France). Prof. Olivier Kah supervised my training there, during which I acquired a comprehensive knowledge of fish neuroanatomy. I completed my PhD with 9 publications in international peer-reviewed journals, including 5 as first author.

Shortly after finishing my PhD, in 2016, I was awarded a Marie Skłodowska-Curie Individual European Fellowship, following which I joined Prof. Rui Oliveira' s Integrative Behavioural Biology Group (Gulbenkian Science Institute, Portugal). There, I studied the behavioral and physiological mechanisms involved in judgment bias and their role in triggering the stress response in zebrafish (Danio rerio). At Rui Oliveira' s laboratory, I acquired several important skills and knowledge in the field of fish behavior (e.g. assessment of behavioral traits, anxiety, affective states). Notably, I developed and validated, for the first time in a fish species, a behavioral assay to measure judgment bias in zebrafish that allow to categorize them in an optimistic/ pessimistic dimension. Some of the work related to my first Postdoc is already published, while the remaining studies are currently being written. In 2019, I was awarded a Marie Skłodowska-Curie Global Fellowship, following which I joined Prof. Koichi Kawakami' s laboratory (National Institute of Genetics, Japan). At NIG (outgoing phase), I aimed to characterize the specific neural circuits underlying judgment bias. For this purpose, I developed a transgenic zebrafish that enable the genetic labelling of c-fos-active neurons, allowing a precise dissection of functional brain circuits. During the return phase (IGC, Portugal), I unraveled the role of judgment bias on the composition of gut microbiota in zebrafish and microbial association networks. This postdoctoral training enabled me to acquire several important skills, knowledge and expertise in molecular genetics (e.g. Tol2-mediated transgenesis and CRISPR/Cas9 technology) as well as strengthen my expertise in fish behavior. The work related to my second Postdoc is currently being written. In 2018, I also conducted a research project as Principal Investigator, which was funded by the Portuguese Fundação para a Ciência e a Tecnologia (FCT). My project' s main aim was to test the role of judgment bias in the vulnerability to stress dysregulation and its specific detrimental consequences throughout an organism' s lifespan. This FCT project allowed me to supervise and mentor the early postdoctoral researcher (María Victoria Alvarado; 30 months) hired to work on the project.

Área Temática:	Ciencias de la educación
Nombre:	CUERVO SÁNCHEZ, SANDRA LILIANA
Referencia:	RYC2022-035979-I
Correo Electrónico:	sandraliliana.cuervo@ehu.eus
Título:	Responsible and critical use of internet and digital devices.

Resumen de la Memoria:

My research career has been focused on media education. I have developed it by elaborating educational materials that allow teachers at schools and universities to work on competences related to media, new technologies and digital competence. In this work, I have sought that in my pedagogical and scientific contributions converge both the knowledge of media education, the development of digital competence and the development of critical thinking. Likewise, I have sought that my scientific production is linked to the school reality, that it has an impact among students and teachers, while it is projected within the schemes of highquality academic production seeking to maintain at all times the relationship between education, science and society. There are clear signs of that purpose in the scientific production that I have developed, part of it published in journals, editorials and high impact academic events (3-JCR-Q1) (2-SJR-Q2), 2 books (SPI-), 6 book chapters (SPI-Q1) and 13 communications in international conferences), as well as in research projects with intervention in learning spaces, both school and university with public funding.

Among my contributions in the field of media education, the development and publication of an instrument with statistical validity to identify the degree of media and informational competence as well as the didactic materials to be used by teachers with the adolescent population in different cultural contexts stood out. Both productions are in open access. I highlight the convergence that I have been able to point out in my theoretical contributions between media and information education, and the confrontation of disinformation and citizenship education. At that time, it was a topic that was developed on the margins of media education, but after the pandemic and with the current political scenario of war, it is reborn as a priority to be addressed by the education system, both from schools and teacher training centers.

My participation in innovation projects has allowed me to develop intercultural and international research, in which my experience in task management and achievement of project objectives is associated with the ability to work, internationalization and innovation.

Currently, as a result of my international research stay and the work within the UNESCO Chair of Communication and Educational Values of the UPV/EHU, I am conducting research that responds to the social and cultural challenges as a consequence of the omnipotent use of technology in everyday life. Specifically, the search for strategies to promote a responsible and critical use of digital devices among young people through the adaptation of educational materials to the contextual realities and linguistic diversity of the Spanish and European environment in secondary and university education.

Resumen del Currículum Vitae:

In 2012, the UNESCO Chair in Communication and Values Education at the University of the Basque Country (UPV/EHU), approved my incorporation as a permanent postdoctoral researcher in which the lines of research are media and information literacy, digital competence, responsible use of the Internet and digital devices, as well as anti-racist education. I have investigated these areas of study through direct participation in research projects with public funding (5) and funding from research agencies in Spain (2) and Canada (1).

In 2017 I obtained my PhD with distinction in Psychodidactics: Educational Psychology and Specific Didactics from the UPV/EHU. First, I tried to solidify the framework on media and information literacy namely, scope and systematization. Secondly, I worked on the development and application of a set of didactic units to promote media and information literacy in school curricula aimed at the adolescent population in Spain, Ecuador and Colombia. This research has had a direct impact on the training of teachers and students in three types of intervention contexts. In addition, throughout this research I have innovated by designing a new research instrument to assess media and informational competence.

In addition, in 2017 I coordinated two projects to raise awareness of racism in schools and universities in the Basque Country. The first project pertained to forms of racism in European totalitarianism while the second focused on the social and political situation of refugees in Europe. Both projects were funded by the European government and have had a direct impact on teachers as well as students in schools and universities.

In addition, I received a postdoctoral fellowship from the Basque Government (2018-2021) that extended into an internship at the University of Quebec in Outaouais (Canada) comprising the UNESCO Chair in Democracy, Global Citizenship and Transformative Education (2018-2020). During this internship in Canada, I supervised data collection and analysis for a research project on social media, citizen participation and education. This project had been approved and funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) for 2016-2020.

Among the main contributions to knowledge generation, obtaining very relevant results on the relationship between media education and citizen awareness in digital contexts whether it is education for democracy, confronting misinformation or racism.

Since 2021, I have participated in two research projects (GIU 20/053 and MINECO G20/P61 PID2020-113918GB-I00) on the responsible and critical use of the Internet in adolescents based on the results previously obtained in my research on the risks in the use of social networks and the Internet.

In 2022 I have led the design a didactic material aimed at developing a responsible and critical use of digital devices that is being implemented with adolescents and young people in different EU countries.

Throughout this decade, I have developed as a researcher with a regular production of scientific articles of high scientific impact including 5 articles in indexed journals (3-JCR-Q1) (2SJR-Q2), 2 books (SPI-), 6 book chapters (SPI-Q1) and 13 communications in international congresses. In addition, I act as a reviewer for a journal of education and communication (JCR-Q1).

Área Temática:	Ciencias físicas
Nombre:	ZAMBUJAL FERREIRA, RICARDO
Referencia:	RYC2022-037330-I
Correo Electrónico:	rzambujal@ifae.es
Título:	Footprints of new physics in cosmological and astrophysical data

Resumen de la Memoria:

My research path started at the U. Porto, where I authored 2 publications on modified gravity (1 with 100+ cit.) during my master's studies. I then moved to the CP3-Origins Institute (Denmark) to do my doctoral studies on new probes of inflationary physics under the supervision of Martin Sloth. Among the 6 works I published during that time (2 w/o advisor), I highlight the first observationally viable model of inflationary magnetogenesis, capable of explaining the observations of extragalactic magnetic fields (100+ cit.), and the derivation of universal constraints on the axion decay constant during inflation (80+ cit.). My collaboration with Martin Sloth continued beyond the PhD, this time in the context of asymptotic symmetries and the connections to soft modes in de-Sitter. These works on infrared effects in gravity were influential to my later work with C. Heisenberg on Hawking radiation.

In 2016, I moved to the U. Barcelona (UB) for my first postdoctoral experience. During that time, I had a prolific collaboration with Alessio Notari and other collaborators. We proposed 2 disruptive ideas. First, a new way to probe the QCD axion, and more general axions also known as ALPs, through the CMB (in PRL; 150+ cit.). These papers inspired a series of subsequent works on the subject. Second, a new class of inflationary models where the inflaton sustains a thermal bath during inflation through the coupling to Standard Model gauge fields.
Both ideas were instrumental in my career; since then, I focused an important part of my research on the study of cosmological and astrophysical signatures of axions, and strong particle production during inflation.

At Nordita (Stockholm, 2018-2020), I launched collaborations with local researchers (C. Heissenberg) and with researchers in neighbouring institutes, in particular with David Marsh with whom I started a longstanding collaboration. With David and T. Bjorkmo we established that, contrary to what was argued in the literature, inflationary models with rapid turns in field space can be viable despite the exponential growth of scalar perturbations. Then, in a single-authored paper, I derived the first observational bounds on such models from non-Gaussianities and the overproduction of black holes.
During my time at Nordita, I also planted the seeds for another project with David and E. Müller on the relevance of loop-induced processes in searches for axions, which was finished a few years later. This project resulted in two publications (one in PRL) and was very consequential for axion dark matter direct detection experiments.

In 2020, I brought my expertise in cosmology and axion physics to the theory group at IFAE (Barcelona) and in 2022 I was awarded the Beatriu de Pinós fellowship. At IFAE, I have been providing cross-field connections between cosmology and particle physics. These interactions quickly resulted in two important publications (one in PRL) in collaboration with A. Notari, O.Pujolàs and F. Rompineve, where we highlighted the outstanding prospects to probe domain walls through GW observatories and their intrinsic connection with axion physics.

Alongside my fellowship, I am also part few other international projects, among those the Einstein Telescope collaboration, BabyIAXO working group (U. Barcelona) and member of the Governance task force of EuCAPT.

Resumen del Currículum Vitae:

My research has been devoted to the interface between cosmology, astroparticle physics and gravity: I made important contributions to the model building in multi-field inflation, where I am a leading expert; I identified new probes of axion physics and derived state-of-the-art bounds on the axion couplings to standard model particles; I proposed novel connections between asymptotic symmetries and infrared effects in gravity.
This research has been impactful. My 27 peer-reviewed publications (25 in journals of the 1st quartile) have more than 1050 citations, include 3 top-cited works (100+ cit.), and have been referenced by some of the largest experimental collaborations in cosmology and axion physics (e.g. LISA, CMB-S4, IAXO). Noteworthy, two of my publications in 2022 were published in Physical Review Letters, one of the most prestigious journals in Physics, thus attesting to the cutting-edge nature of my current research. My publications have been co-authored with 25 different collaborators from 14 leading institutions in Europe and the USA, including younger researchers I mentored throughout the projects.

I have had large international exposure at the level of dissemination. I delivered 39 seminars at different renowned institutes and congresses in Europe, America and Asia. In 14 of those, I was an invited speaker, including a recent invitation to give an overview talk on Axions in Cosmology at the EuCAPT (European Consortium for Astroparticle Theory) Symposium and I have also organised 6 scientific events (2 PhD schools, 2 workshops, 1 retreat, 1 conference).

I have considerable experience in teaching (100+ hours) and supervising students (1 bachelor, 2 master and 1 PhD thesis; tutor on multiple occasions). I was recently awarded 1 research grant (277k euros, PI) and 3 fellowships in international calls, and I am a regular referee for journals with large impact factors (e.g. JCAP, EPJ). Finally, I highlight my active involvement in scientific collaborations; I am currently the representative of IFAE at the EuCAPT council and a member of the Governance task force of EuCAPT. I have recently joined the Einstein Telescope Collaboration.

I have also been active in disseminating science to the general public; I have recently talked about Cosmology to high-school students from the Instituto Angeleta Ferrer (Sant Cugat), and co-elaborated a few years ago, with other colleagues at the U. Barcelona, a travelling exhibition about General Relativity and Cosmology aimed at high-school students.

Área Temática:	Ciencias físicas
Nombre:	BELENCHIA , ALESSIO
Referencia:	RYC2022-038053-I
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Título:	Quantum technologies for exploring fundamental physics

Resumen de la Memoria:

My scientific interests span from fundamental quantum physics to the applications of quantum information tools to systems of technological interest. During my PhD I worked in quantum gravity phenomenology investigating features of different quantum gravity models. In the last part of my doctorate, I started to get interested in table-top quantum architectures to probe the boundary between gravity and quantum physics without abiding by any specific quantum gravity model. This led me to start investigating topics in relativistic quantum information and gravitational quantum physics. In particular, I contributed to both the ongoing discussion on the possibility to test the quantum nature of gravity -- a result that won the first award in the Gravity research foundation competition in 2019 -- and to the investigation of the possibility to test modifications of standard quantum mechanics in systems of growing size and complexity. For the latter, I have investigated the potential of mesoscopic quantum experiments -- extending the formalism of near-field interferometry -- in collaboration with international consortia aiming at the realization of either Earth-bound or space-based quantum experiments with large quantum systems.

The control of massive quantum systems is crucial in these endeavours. For this reason, in 2018 I initiated a line of investigation in the quantum thermodynamics of mesoscopic systems aimed at unveiling the role of quantum measurement and control. This has led, among other results, to the first experimental observation of the entropy production associated with quantum measurements in a mechanical quantum system. This topic has also technological ramifications in connection to the characterization of the energetics of quantum processes that I am interested in exploring.

My aim in the next five years is to continue the exploration of the boundaries of quantum physics with an eye at phenomenological tests and possible technological applications of the theoretical results that I will achieve with my group. In particular, I will investigate the out-of-equilibrium physics of mesoscopic quantum systems aiming to 1) model the gravitational field of quantum mesoscopic systems; 2) characterize the thermodynamic irreversibility of quantum systems out-of-equilibrium and the quantum-to-classical transition; and 3) design table-top set-ups for quantum spacetime and thermodynamics phenomenology.

To accomplish this, I will develop information-theoretic tools to characterize the role of quantum-limited detectors in quantum thermodynamics and to describe the gravitational field of quantum systems. Working in collaboration with experimental groups, I will explore suitable technological architectures and novel quantum protocols for the phenomenological validation of the theoretical results. In this context, I have established an extended network of collaborators including world-leading experimental and theoretical groups. I have been, and am currently, a member of different international collaborations like the QTSpace COST Action, the MAQRO space mission consortium the FET project TEQ. More prominently, I am currently a member of EIC Grant QuCoM – Quantum Control of Gravity with Levitated Mechanics involving also high-tech companies interested in the potential of levitated massive quantum systems as ultrasensitive force sensors.

Resumen del Currículum Vitae:

I obtained my PhD in 2016 from SISSA (Italy) defending a thesis on "Exploring Spacetime Phenomenology". I then moved to the Italian National Research Council and the National Institute of Optics (CNR-INO) as a postdoctoral fellow in the optomechanics group of Prof Marin. In 2017, I moved to IQOQI Vienna for 2 years as a postdoctoral researcher in the group of Prof Brukner at IQOQI-Vienna (Austria) in collaboration with Prof Aspelmeyer, two leading experts in quantum foundations/gravitational quantum physics and optomechanics worldwide. In 2018, I won a Marie Skłodowska-Curie research fellowship in collaboration with the Quantum Technology at Queen's group of Prof Paternostro in Belfast (UK). Finally, in 2020 I moved to Tuebingen (Germany) as a postdoctoral fellow in the theoretical quantum optics group of Prof Barun.

Since 2013 I have authored 32 published works of which 24 as the first (co-)author or last author, 5 preprints and 2 proceedings. They include 1 comment article in Nature; 1 Physics Reports; 1 Nature Communications (in the "Nature Communications 2020 Top 50 Physics Articles"); 1 Reports on Progress in Physics; 3 Physical Review Letters, one Editors' Suggestion; 1 PRX Quantum; 1 npj Quantum Information; 1 Communications Physics; 2 Journal of High Energy Physics; 1 New Journal of Physics; 6 (one rapid communication) Physical Review D; 5 (one single-authored) Classical and Quantum Gravity; 4 Physical Review A, one Letter and one Editors' Suggestion; 1 Europhysics Letters; 1 International Journal of Modern Physics D, with 771 citations and h-index 17 (source: Google Scholar).

I have been invited to 16 international conferences and to present 18 seminars in internationally recognized universities and institutes. I have also disseminated my research results by participating as a contributed speaker to 15, and presenting posters to 6, international conferences and workshops. Furthermore, I have taken part in several outreach activities like the SISSA for the Schools outreach program and participation in science festivals.

I have organized several international events -- the latest being the Quantum Thermodynamics conference in 2022. I am an active referee for several peer-review journals, and I am the guest editor of two special issues for the journals Applied Sciences and Entropy.

Since 2018, I have co-supervised an MSc student and two PhD students. I am currently co-supervising a third PhD student in Tübingen. I have also acquired teaching experience and have been the lecturer for a 30-hour course in Selected Topics in Quantum Thermodynamics for the 2022 Summer semester at the University of Tübingen.

In 2016, I was awarded the "Giuliano Toraldo di Francia" award by the Italian Society of Physics (SIF) for my scientific career. In 2018 I was awarded a two-year Marie Curie research fellowship for my project pERFEcTO and in 2019 I won the first prize in the Gravity researcher foundation essay competition. I have also been recently awarded a 5-year Illuminate fellowship from Queen's University Belfast. Finally, in 2022 I obtained the Italian Habilitation for Professorship ("Abilitazione Scientifica Nazionale") for Associate professor in Theoretical Physics (ASN, sector FIS02/A2).

Área Temática:	Ciencias físicas
Nombre:	RODRÍGUEZ GÓMEZ, SALVADOR
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Título:	Towards accurate simulations in flexible nanoporous materials

Resumen de la Memoria:

I am a postdoctoral researcher leading research lines mainly based on theoretical calculations, molecular simulations and computer programs to reverse-engine properties of (porous) materials that allow atomistic modelling of societally relevant systems at an unprecedented quality level. My research career could be organised around four research lines: "Flexibility in soft nanoporous materials", "Design and synthesis of new materials", "Nucleation and crystal growth of nanoporous materials", and "Societally relevant applications". My ten selected contributions that summarised my career are spanned in this research lines. I have demonstrated experience across material science, physics, chemistry, and knowledge transfer. My research aligns with Spanish and European priority areas, such as clean energy, climate change, and technological independence.

My career has been awarded with two PhD recognitions (prizes), and 1 research award, and two recognitions from private institutions.

Regarding internationalisation and mobility, I have been a researcher with a solid experience in visiting other researchers and centres of high prestige, gaining extensive experience and knowledge from hosting institutions and I gave useful knowledge back. During my thesis and first postdoc I made four research stays at the Van 't Hoff Institute for Molecular Sciences, UvA, Netherlands (5 months), and at the Institute Charles Gerhardt Montpellier (ICGM-CNRS), France (6 months), which were funded by mobility grants that I obtained myself. Since 2019 I have been a postdoctoral researcher, hired through several competitive contracts, working in prestigious institutions: ICGM-CNRS with Prof. G Maurin (2019-2020), CSIC-ICMM with Prof. MA Camblor (Juan de la Cierva-Formación, 2020-2022), and UPO with Dr. S Hamad (Talento PAIDI Junta de Andalucía, since 2022). I participate in a large number of international congresses, which I have taken advantage of by creating new collaborations. I also participate in two international consortia: 1) green synthesis of zeolites and 2) clean energy production using solar cells.

The significant experience gained during my research career, along with the high quality of achievements and initiatives, offer me a promising future as independent researcher. Two important aspects of my career are that: 1) the kind of research performed during my predoctoral and postdoctoral stages has been in majority initiated by myself, which highlights my independence and leadership, and that 2) I have been involved in numerous studies in which the joint analysis of experimental and theoretical results has provided information at the atomic scale of various scientific problems, being me the only theoretical researcher.

I leaded 4 competitive contracts, 1 computational projects, and more than 6 research lines in national and European projects. I have leaded the theoretical research lines in groups in which I was the only theoretician researcher.

Resumen del Currículum Vitae:

I am currently a postdoctoral researcher leading an independent research line in design of new properties of nanoporous materials. My research work is mainly based on theoretical calculations, and it involves the development of algorithms, interatomic potentials, simulation methods and computer programs to reverse-engine properties of (porous) materials. It allow me the atomistic modelling of societally relevant systems at an unprecedented level of simultaneous crystallographic and experimental molecular dynamic quality. I applied my research work to a wide range of topics: nucleation and crystal growth of nanoporous materials, adsorption and transport of light molecules through zeolites and MOFs, molecular separation/purification using MOFs, design of new materials (Ordered Nanoporous Metals, and two zeolites), hybrid organic–inorganic metal halide perovskite solar cells, intrinsic flexibility, spectroscopy, and physical and chemical characterization of materials. I have worked in close collaboration with experimental and theoretical groups all over the world (UK, France, Netherlands, Israel, Korea, USA) with high-profile researchers: Profs. MA Camblor (ICMM-CSIC, Spain), CRA Catlow (UCL, UK), G Maurin (CNRS-Montpellier, France), SB Hong (POSTECH, Korea), and others. My contributions often provide valuable feedback and computational-anticipation from a molecular point of view, across a wide range of fields, to guide and find interpretations to experimental measurements.

I have co-authored 27 JCR publications, [8 as first author and 3 as corresponding author] and a book chapter, accumulating 560 citations, with exponential growth (+130 in 2022), and an H-index of 15 according Google Scholar (14 according WOS). My work is focused on disruptive research, as evidenced by 12 top-quality papers in D1 journals (45%) including JACS, Angew. Chem. Int. Ed, Chem. Mater., and J. Mater. Chem. A, among the most relevant. Another 11 papers also appear in Q1 journals (total 23, 81%), as for example Nanoscale and ACS Appl. Mater. Interfaces. I have participated in 10 national and international projects. I have leaded research lines in these projects. I have raised €277,615 (~92% for wage, and 8% for research). A relevant extra-point of my scientific/technical output is the production of scientific software, freely accessible (Github repository, > 30 codes).

I have been reviewer for 22 scientific articles (e.g. ACS Appl. Mater. Interfaces, J. Chem. Phys., and Microp. Mesop. Materials). Regarding outreach activities I have written 2 dissemination articles in MoleQla (ISSN-e 2173-0903), and I have also contributed in science dissemination events, such as Feria de la Ciencia and Science Talks in Pubs about self-assembling units, thermodynamics, and origin of life. My teaching activity involves 332 grade-level hours of teaching at UPO (courses of Thermodynamics, Environmental Pollution, and General Chemistry in Biotechnology and Environmental Sciences degrees). I have been co-supervisor of 1 BSc thesis (another ongoing), 2 MSc theses (another ongoing), and 1 ongoing PhD thesis. I have received a positive evaluation from ANECA as lecturer for public and private universities (Profesor Contratado Doctor). Regarding institutional responsibilities, I was member of the Equality Commission of the ICMM-CSI, and I am a founder member of the Sociedad Española de Adsorción (SEAd).

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática: Ciencias físicas
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Título: Gravitational Waves Astrophysics with the LVK

Resumen de la Memoria:

I am the gravitational wave astronomer at the Universitat de Barcelona. We are part of the Virgo collaboration, which gives us unlimited access to LIGO-Virgo-KAGRA data and resources. I lead theoretical and data analysis efforts in gravitational lensing, parameter estimation for eccentric binaries and improvement of data through glitch modeling and denoising. I am also interested in the multimessenger aspects of neutron star crust fracture. We have a new, but increasing group, which has been successful in attaining funding from both the Spanish Ministry of Science and the Catalan Government. I work with existent students (H. Ubach, P. Barneo, J. Trenado) and faculty (O. Bulashenko, T. Andrade, M. Gieles, A. Rios and J. Portell) and with new students: P. Muguruza, who just started Masters with me, after obtaining a first class degree at the University College London and Y. Yousef, who came to Barcelona from the University of Virginia supported by US funding. My job is to connect the ICC UB research to LVK data analysis. My role is important because Virgo membership carries responsibility towards ensuring the success of the upcoming science runs: O4 in May 2023 projected to last 18 months and O5 in 2025. Virgo upgrades, which will implement frequency dependent squeezing and improvements in mirror technology (Bersanetti et al. 2021), are expected to be completed by May 2023. They will lead to an increase in event rate of up to one order of magnitude, which we must be prepared to handle. I am involved in the development of detection and parameter estimation pipelines in preparation for upcoming runs. While detections of gravitational wave signals are now routine, my interest lies in getting the pipelines and the detectors ready for events that have not been seen before. By the end of O5, we expect to detect the first lensed gravitational waves signals, and to determine a population of black hole mergers from globular clusters. Understanding and modeling BH eccentricity is key in making this discovery.

Looking into the future beyond the LVK, the ICC has recently joined the Einstein Telescope Collaboration. The Einstein Telescope (ET) is the next generation gravitational-wave detector, due to start construction in 2026 and take data in 2035. It will see many more signals with greater sensitivity than current detectors. In order to insure the success of ET we must begin now to develop the methods needed to exploit the potential of this data to revolutionize astrophysics and cosmology. With the much larger range of the detectors provided by ET, we will see many gravitationally lensed systems. I will investigate methods for extracting the parameters when there are multiple microlensing events from a signal passing through a galaxy or cluster. I will work with others at ICC to predict how we can constrain primordial and intermediate mass black holes from these lensing detections. I can now also use ET predicted noise curves to obtain limits for our lensing model, and on eccentricity recovery. Einstein Telescope's ability to see lower frequencies makes eccentricity far more measurable than with current detectors. Hence there is more chance of seeing multiple encounters or hyperbolic orbits. I will investigate the use of these to determine how globular clusters form and evolve, making use of the ICC's expertise in globular cluster simulations.

Resumen del Currículum Vitae:

I have a proven record as a first-class scientist with a BS and MS from the University of Illinois at Urbana-Champaign (supervisor Prof. H. Edward Seidel) with Magna cum Laude and highest distinction in the curriculum. I was funded by the NSF and Microsoft to perform grid computing, which provided seminal ideas for the cloud (Bondarescu, Seidel et al. FGCS 2005, 34 citations summarizes our work that won two HPC challenge awards for (1) the most distributed application and (2) the most distributed set of platforms and (3) the Bandwidth challenge at SC2002). The grants covered my tuition, salary, a laptop and travel. I was subsequently awarded Cornell's prestigious two-year fellowship to join Saul Teukolsky's group. I hold a PhD from Cornell University, where I gained expertise in neutron star physics (Bondarescu, Teukoslky & Wasserman PRD 2007, 121 citations, and PRD 2009, 123 citations). In the same period, I performed the first numerical simulations with waveform extraction of perturbed boson stars and soliton stars (Balakrishna, Bondarescu et al CQG 2006, 49 citations, PRD 2008, 20 citations). I continued as a postdoctoral scholar at Penn State University, where I was funded by the NSF to join the LIGO collaboration (my Cornell work contributed to continuous wave searches, and particularly to publications Abadie, Bondarescu, et al. ApJ 722, 1504, 2010, 151 citations and Abbott, Bondarescu et al PRL 107, 271102, 2011, 143 citations). Furthermore, I showed that dark matter could be luke-warm (Lundgren, Bondarescu et al. ApJL 2010, 68 citations) and that the crust of neutron stars can shatter (Tsang, Bondarescu et al. PRL 2012, 189 citations, spotlighted by APS and by the press including the New Scientist) to produce detectable flares before short GRBs. I then received a Dr Tomalla fellowship to join the University of Zurich, where I gained expertise in atomic clocks (Bondarescu et al GIJ 2012, 74 citations, and GIJ 2015, 50 citations, widely featured in the press including the New Scientist, the IEEESpectrum and the MIT Technology review. In 2012 the European Space Agency noticed my work and invited me to collaborate on future clock missions (Aguilera, Bondarescu et al. CQG 2014, 251 citations) to explore how they test general relativity (Angelil, Bondarescu et al. PRD 2014, 25 citations, Schaerer, Bondarescu et al PRD 2014, 33 citations). I also investigated the ability to constrain planetary spin from spacecraft tracking (Front. Astron. Space Sci. 4, 11, 2017, 5 citations. My work was partly funded by a Forshungskredit Grant, PI: Bondarescu, 94,000CHF/yr. Today I am the gravitational wave astronomer at the ICC UB. My research is funded by ICC's Maria de Maeztu grant. As thus I am combining my expertise with that of other members of our institute to improve our ability to detect gravitational waves in the next LVK science run. I focus on improving data through denoising and glitch analysis and on enabling detections from unknown sources. I am particularly interested in gravitational lensing, which extends the volume of the universe that the LVK reaches to z=3.5 (Bondarescu et al. PRD in press), eccentric binaries (Yara Yousef, Masters Thesis, UB 2022, Pablo Mguruza, Masters Thesis, UB 2023, in progress), and exotic compact objects. We have on-going collaboration with the University of Valencia funded by the Spanish Ministry of science.

Área Temática:	Ciencias físicas
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Título:	Development of state-of-the-art particle detectors for fundamental Physics beyond the Standard Model and new technological applications

Resumen de la Memoria:

Throughout my years as a researcher, I have contributed to the generation of knowledge in different fields, always within the framework of developing innovative particle detectors. Along my career, I have been associated to Universities and research centres such as Universidad de Zaragoza, University of Oxford and the Institute of Research into the Fundamental Laws of the Universe (IRFU) at CEA-Saclay (University Paris – Saclay). I have also worked in singular environments as underground laboratories (SNOLAB in Canada and Laboratorio Subterráneo de Canfranc in Spain) and accelerators (as the European Spallation Source, ESS, in Sweden).

I have participated in neutrino physics experiments as SNO+ (as a post-doc) and NEXT (during my PhD). They look for the theoretically neutrinoless double beta decay, process that will determine the nature of the neutrino and constraint its effective mass and hierarchy. In SNO+ and NEXT I gained experience in the commissioning of experimental set-ups going from their conception to the construction and data taking and analysis, coordinating working groups of physicists, engineers and technical staff. I have developed simulation skills through MonteCarlo studies and acquired experience in the use of different experimental techniques as gaseous detectors, scintillator and different detectors as Micromegas or photomultipliers.

Thanks to this knowledge, I joined IRFU in a project to develop a new type of beam loss monitor to control losses in particles accelerators. The acquired skills in this different field were combined with my experience in Micromegas detectors as well as in proof-of concept studies through MonteCarlo simulations, which allowed me to contribute to the project very quickly. Moreover, I gained experience with neutron physics and detection, broadening my knowledge in the field of particle physics. I manage and coordinate the activities between the different work-packages of the project: detector design, controls system design and gas system. This involve the work of more than 10 people in different departments. Furthermore, I was in charge of the experimental campaigns for proof-of-concept carried out at different irradiation facilities.

Thanks to this work, I obtained a fixed-term contract in the Electronics, Detectors and Computing Division (DEDIP) of IRFU in December 2019. Besides continuing the coordination of different projects, since November 2020, I am also the head of a laboratory of 17 members, in charge of the integration of state-of-the-art detectors.

With my experience and the projects I have developed along my career, I would continue to search for new detector concepts for fundamental research applications (particle physics) but also evaluating their potential for societal and industrial applications (safety control, radiation imaging...). In a short term using gaseous detectors like Micromegas, but I envisaged exploring new detection techniques in a further phase, alone or in combination with others (as I already did combining Micromegas with optical readout). An important subject to consider is to develop the analysis and simulation framework needed to fully exploit the detector performance. In this regard, new approaches based on machine learning will be explored. Thanks to my management experience, I would like to continue leading teams and projects.

Resumen del Currículum Vitae:

During my research career I have been working in different international collaborations in the field of particle physics and beam instrumentation for accelerators, within the framework of developing innovative particle detectors.

In my current position, as a fixed-term researcher at the Institute of fundamental laws of the Universe (IRFU) (inside the French Alternative Energies and Atomic Energy Commission (CEA) – Universite Paris Saclay), I am leading several projects in the field of accelerators instrumentation. My primary activities are related with the development of a new beam loss monitor based on the detection of neutrons using Micromegas detectors (signal amplification structures in gaseous media). The work was starting when I joined the CEA as a Eurotalents Fellow in 2016 in the context of equipping the European Spallation Source (ESS) under construction. This development received the international recognition when I was awarded with the Faraday Cup Award in 2019 and has been of interest to the international community, leading our group to projects with other accelerators interested in the use of this system: SARAF (Israel), IPHI (CEA) and Ifmif-Dones (Granada, Spain).

During the first years at CEA I was in charge of MonteCarlo simulations to study the suitability of the proposed detectors to ESS requirements. I equally performed data collection and data analysis during the detector validation campaigns before moving to the production phase. I am the coordinator of three projects, leading the work of a group of about five people in my department and coordinating with the work of groups in different departments, involving more than 10 persons.

In my actual position, I am also the head of a laboratory of 17 members (including physicists, engineers and technical staff). My main objectives include the management of the strategy and positioning of the laboratory within the department, and personnel management activities, including workload distribution, recruitment interviews and competences management.

Formerly, during my post-doctoral years at Oxford University as SNO+ member (a neutrino physics experiment), I was actively involved in the development of a tellurium loading technique in liquid scintillator. I was responsible for the optical measurements of the mixture, its integration into the collaborative simulation model and its validation. During my PhD years at the Universidad de Zaragoza, my work focused on the study of Micromegas detectors for the NEXT experiment to search for double beta decay in Xenon gas, during its prototypes phase. My work included an experimental contribution, participating in the set-up of a 10 kg time projection chamber (TPC) operated at 10 bar equipped with Micromegas and the

analysis of the first experimental data. In addition, I carried out the sensitivity study of this experimental proposal through MonteCarlo simulations comparing it with other experimental techniques for this type of experiments.

Along these years, I participated in scientific outreach activities and I have supervised master students. I have taught practical laboratory classes at the University of Zaragoza, at the University of Oxford and at the master's degree of the Universite Paris-Saclay.

All my contributions are reflected in the more than 50 publications to journals and international conferences to date.

Área Temática:	Ciencias físicas
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Título:	Quantum technologies: semiconductor qubits and hybrid systems

Resumen de la Memoria:

I am a theoretical physicist in the field of condensed matter. My main line of research is semiconductor quantum computation. I am interested in understanding and predicting the behavior of semiconductor qubits, particularly in Silicon and Germanium. Ultimately, my primary goal is to overcome the different challenges of building a semiconductor-based quantum computer. I have performed simulations of various phenomena in semiconductor qubits, publishing purely theoretical and experimental results. In the experimental articles, I have used my simulations to explain the experiments from international groups in Cambridge, UW-Madison, ETH Zurich, and CEA Grenoble.

Ever since my Ph.D. at ICMM-CSIC, my work has been focused on the simulation of different phenomena in semiconductor qubits: hole spins, valley physics, hybrid systems, and electron-electron interactions, for which I have developed my own code. I started simulating hole-spin qubits in Madrid, developing a variational method to describe hole qubits realistically. This method led to three purely theoretical publications, one of them collaborating with Sven Rogge's group at the CQC2T center in Sydney, where I stayed for three months. Also, during my Ph.D. I developed a simplified code to simulate valley physics in Si devices. This approach provided theoretical support to experiments at UW-Madison and Cambridge.

I worked as a postdoc at the University of Wisconsin-Madison, where I developed a framework to characterize photon-mediated two-qubit gates, yielding two theory publications. I have used this framework in collaboration with K. Ensslin's group to simulate their experiments, which led to three publications, one of which was the demonstration of transmon-spin qubit coupling. In Madison, I also developed expertise in electron-electron interactions and supported the experiments in M. Eriksson's group, among which I highlight the demonstration of a Wigner molecule in a Si double quantum dot. During this postdoc I supervised an undergraduate student on hybrid semiconductor-superconducting cavity systems.

I am currently working as a postdoc at CEA-Grenoble, where I use all the acquired knowledge, from hole physics to spin-photon coupling, to simulate their semiconductor qubit devices. In this postdoc, I have led a significant part of the theory activities in the group, from simulations of Ge devices to spin-photon coupling. I remark here on the finding of new mechanisms for hole spin manipulation based on the inhomogeneities of realistic devices and the prolific collaboration with the local experimental team. This collaboration has led to the demonstration of the hole spin with the longest coherence times and the first demonstration of hole spin-photon coupling, surpassing the coupling achieved with electrons in more than one order of magnitude.

I plan to focus my research line in quantum technologies in three directions: (1) Optimization of hole spin qubits through realistic simulations. (2) Exploration of hybrid devices for long-range interactions. (3) Development of a framework for realistic simulations of hybrid superconductor-semiconductor qubits, such as gatemons or Andreev bound states.

Resumen del Currículum Vitae:

I did my Ph.D. Thesis at the Institute of Material Science (ICMM) in Madrid under the supervision of María José Calderón, focusing on semiconductor-based quantum computation. I am a theorist, and I perform simulations of quantum bits in semiconductor devices. In particular, during my Ph. D., I focused on acceptor hole spin qubits and valley physics in quantum dots. I am currently working as a postdoc at the theory and simulations department in the CEA Grenoble. I collaborate with Dr. Yann-Michel Niquet performing simulations of Silicon and Germanium-based quantum devices, focusing mainly on hole spins. Previously, I worked as a postdoc under the supervision of Dr. Mark Friesen and Prof. Sue Coppersmith at the University of Wisconsin-Madison. I focused on performing simulations of valley physics in Si and qubit dynamics in quantum dots.

In my research, I use numerical simulations and analytical methods to tackle challenges in solid-state quantum computing. My main contributions include work on hole spins in semiconductors to improve scalability, control and exploitation of valley physics in Si devices to enhance coherence, a framework for simulating quantum dynamics, and research on hybridizing different quantum computing platforms. I have made several findings in hole manipulation and provided theoretical support for experiments.

I have 17 published papers in Q1 journals (e.g., Nat. Nano, Nat. Physics, PRL) and 2 preprints. Among the theorists, I have been the first or second author in all my contributions. In google scholar, I have an h-index of 11.

I have established a network of collaborators with multiple international teams, both in theory and experimental groups. In particular, I have collaborated with experimental teams from the USA, the UK, Switzerland, Australia, and France. I provided theoretical support that helped to understand their experiments on quantum computing with semiconductor devices. In these collaborations, I highlight the first demonstration of strong hole spin-photon coupling, the achievement of the hole spin with the longest coherence, and the coupling between a transmon and a semiconductor qubit mediated by photons.

I communicate my results at the conferences and congresses of the RSEF, GEFES, the American Physical Society March Meeting, and the Silicon Quantum Electronics Workshop. The latest two are the leading physics conferences in the USA and my field, respectively. Moreover, I have been part of the organizing committee of the Silicon Quantum Electronics Workshop in 2019, held in San Sebastián. I have given 17 talks, one invited talk, and organized one congress. I have recently started to publish the code I use, and much of the data of my experiment-theory collaborations is available online.

I have participated in 5 research projects and have been awarded an FPI fellowship. I tutored one graduate student during my postdoc at the University of Wisconsin-Madison. I have done outreach activities during the 'Science Week' for three years as a Ph.D. student in Madrid. I have collaborated directly with the private sector in one joint project between several universities in the USA and HRL Laboratories.

Área Temática: Ciencias físicas
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Título: Exoplanet Targets: Composition of their Atmospheres, Formation and Evolution

Resumen de la Memoria:

The discovery of exoplanets has caused a great revolution in modern Astrophysics, overturning old beliefs based on our experience with the Solar System. I devote most of my research time to the characterization of exoplanet atmospheres, aiming to answer fundamental questions about their nature and origins:

Q1) What are different exoplanets made of? Which key factors are most correlated with their composition?

Q2) What are the most frequent formation and evolution pathways for planetary systems?

Q3) Can we detect biosignatures in some exoplanets?

During my career, I have acquired extensive experience with the major techniques for the characterization of exoplanet atmospheres, i.e., the observation of transits, eclipses, phase-curves and high-resolution Doppler spectroscopy. It is crucial to separate the tiny atmospheric signals from others of both instrumental and astrophysical origin. For this reason, I have specialized in the development of data detrending algorithms and in the modeling of stellar and planetary signals. In particular, I have developed blind source separation algorithms (and parametric ones) that proved to be among the most reliable and effective for detrending Spitzer and Hubble Space Telescope data. On the modeling side, I am an expert in stellar limb-darkening, magnetic activity, rotational oblateness, gravity-darkening, Rossiter-McLaughlin effect, planetary self- and phase-blend, and time binning effects. I am the main developer of the opensource python package "ExoTETHyS: Tools for Exoplanetary Transits around Host Stars".

I achieved impactful scientific results, including:

M1) the atmospheric characterization of three rocky planets (55 Cnc e, GJ1132 b and GJ1214 b), finding the first evidence of gaseous absorption around this type of exoplanets;

M2) the creation of a uniform catalog with the transmission spectra of 30 gaseous exoplanets, along with the possible first detection of TiO/VO;

M3) reconciling low- and high-resolution spectroscopy from space and ground-based observatories, respectively, for the iconic hot Jupiter HD209458 b;

M4) the thermal phase-curves analysis of WASP-43 b, overcoming the issue of non-physical atmosphere that appeared in a previous paper;

M5) the validation of more than 24 exoplanets, including prime targets for atmospheric studies (e.g., GJ860 b and TOI-674 b);

M6) precise mass measurements for several systems (e.g., HD191939 and G9-40);

M7) constraints on the repeatability of Spitzer transit photometry, excluding previous claims of stellar variability and a spurious CH_4 detection.

Recently, I have been focusing on the synergies between observing techniques, especially low- and high-resolution spectroscopy from space and ground, to increase our understanding of exoplanet atmospheres. The goal is to create a Bayesian framework to routinely perform joint analyses. My current effort is primarily aimed at maximizing the scientific return of JWST, as well as the upcoming Ariel and PLATO missions. I participated in the analysis of JWST-ERS observations, leading to the broadest and most precise exoplanet transmission spectrum measured so far. I am PI of an ESO program to observe the same planet at high spectral resolution to complete the chemical inventory of its atmosphere. Precise chemistry will enable us to start testing possible scenarios of formation and evolution of exoplanet systems.

Resumen del Currículum Vitae:

I graduated from the University of Palermo with a BSc in Physical Sciences summa cum laude in 2010, followed by an MSc in Physics summa cum laude and honorable mention in 2012. During my MSc thesis, I started experimenting with blind source separation techniques (BSS) to detrend Spitzer data, applying them to transit observations. Then I won a 6-month grant from the University of Palermo to continue this project at University College London (UCL), where I also did my PhD between 2013 and 2016 and a post-doc in 2016/17. In those years I perfected my BSS and non-BSS techniques, obtaining outstanding results from the analysis of exoplanet systems observed with Spitzer and HST. I have held numerous seminars in Europe and the USA, and an Invited Talk to a Splinter Session at the IAU 2015. During my PhD I also won the prestigious IPAC fellowship to carry out a machine-learning classification project on all-sky surveys, working at Caltech for 6 months.

In 2017-2020 I was a post-doc at CEA-Saclay, partially engaged in the H2020/ExoplANETS-A program led by Dr Pierre-Olivier Lagage. At CEA (and UCL) I specialized in the modeling of stellar limb-darkening and other astrophysical effects, also contributing to 3 PhD theses. There, I developed the opensource python package ExoTETHyS.

In 2020 I won the Marie Curie Individual Fellowship for the ExoMAC project, which I led at the Instituto de Astrofisica de Canarias (IAC) together with Dr Enric Palle. This period was transformative for my career, moving from a prevalence of individual work on specific subjects to my involvement in several large collaborations, as well as the acquisition of responsibility and leadership roles. From space, I have acquired leadership roles within the Ariel and PLATO consortia, and reinforced my contribution to the JWST Transiting Exoplanet Community ERS program. From ground, I became part of the CARMENES and MuSCAT2 collaborations, with important contributions to the discovery and characterization of many exoplanet systems. Every year I propose and participate in the organization of two sessions for the Europlanet Science Congress, which is typically attended by over 1000 participants. I was SOC member for the online conference "Exoplanet atmosphere characterization: from HST and Spitzer to JWST", with over 150 registered participants. From a scientific point of view, I am focusing on the exploitation of multiple observing techniques for exoplanet atmospheres, with emphasis on the synergies between low- and high-resolution spectroscopy. I developed a consistent modeling framework that was already useful to reconcile puzzling discrepancies on the atmosphere of HD209458 b. I have also actively participated in the validation of over 24 new exoplanets, and refining the mass measurements in several systems.

I recently won an Ariel Fellowship at Chalmers University, where I am continuing the ExoMAC project (renamed ET CAFE) in collaboration with the IAC.

Área Temática: Ciencias físicas
Nombre: CANTERO GARCIA, JOSU
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Título: SM measurements and BSM searches at the LHC with the ATLAS detector

Resumen de la Memoria:

My research career has been focused mainly on two topics: Standard Model (SM) measurements and Beyond Standard Model (BSM) searches. This work has been done using the data collected during the proton-proton collisions in the Large Hadron Collider (LHC) within the ATLAS Collaboration. Regarding the SM measurements, I was mainly focus on testing perturbative Quantum Chromodynamics (pQCD). To this end, I have measured several differential cross sections involving photon final states, including the Higgs boson search using Higgs->gamma gamma decay channel. In particular, during my period in the high energy group (HEP) of Universidad Autónoma de Madrid (UAM), I played the leading role on several analyses using photons. I would like to note that this work allowed the HEP group of UAM to start a new research line within the ATLAS Collaboration. In particular, the last two PhD students at UAM have obtained their thesis working on these topics. For the latter, I was supply member of the thesis committee. During this period, I also made a publication outside ATLAS. I had the novel idea of using the ATLAS jet shape measurements to measure the mass of the b-quark. In addition, I leaded two novel measurements, such as the measurement of three photon production process and the production of photon plus
heavy-flavored jet. The three photon production measurement is unique, being the first and only ones on triphoton production at hadron colliders and relied entirely on my shoulders alone. Regarding the photon plus heavy-flavored jet production, I was responsible for proposing the measurement of photon plus heavy flavored jet within the ATLAS Collaboration. My idea was very well received by the SM community. This measurement allowed me to coordinate and work with two PhD students resulting in the first and unique measurement of these kind of processes at the LHC which helped to further constraint the heavy-quark content of the proton. Thanks to my work involving photons, I was elected to be convenor of the photon and jets SM ATLAS group.

I started to work in BSM searches as a senior post doctoral researcher of Oklahoma State University (OSU). During this period, I have been working on searches involving W' and Z' bosons and SUSY particles. I have also supervised the degree projects of three OSU students and two PhD students working on W' and SUSY searches using the full Run II data. In addition, I played the leading role on the W' search focused on the fully hadronic final state. Moreover, I highly improved the performance of the ATLAS top tagger algorithm and estimated its uncertainties. In addition, I have developed a novel technique which allow to perform exclusion limits as function of W' mass and its coupling to fermions. This allowed to improve limits for some BSM theories. Regarding the SUSY search, I derived a novel method to improve the data/MC agreement for the background processes. Moreover, I was responsible for deriving and coordinating uncertainties for Z, W boson and top-quark ATLAS taggers. Thanks to my work on jet tagging, I was elected as liaison between the Jet Tagging and Exotics groups and convener of the Jet Tagging group within the ATLAS collaboration. In 2022, I was awarded with the Maria Zambrano grant for the international talent attraction to work as distinguished researched at university of Valencia.

Resumen del Currículum Vitae:

I graduated in Universidad del Pais Vasco in 2006 obtaining the outstanding graduate award in bachelor degree in Physics. During 2006 and 2008, I coursed the Master degree on Theoretical Physics at Universidad Autónoma de Madrid (UAM). I would like to remark that most of the subjects were passed with excellent qualifications after doing hard tests. In 2007 and up to 2011, I was granted with a FPU PhD scholarship from the Spanish government to perform my PhD studies. In 2013, I obtained a PhD by the UAM scoring excellent cum laude under the defense committee formed by Fernando Barreiro (UAM), Fernando Cornet (Universidad de Granada), Halina Abramowicz (Tel Aviv University), Marcos Jimenez (DESY) and José del Peso (UAM) with advisor Prof. Juan Terrón. The research work was carried out between UAM and CERN (Geneve, Switzerland). My main research line was focused on testing perturbative Quantum Chromodynamics (pQCD) by measuring processes with photons in the final state and studying the performance of the Liquid Argon (LAr) calorimeter of the ATLAS detector. In 2011 and up to 2015, I obtained a teaching assistant position at UAM. During this period, I was responsible for the laboratory of experimental physics techniques and laboratory on electronic circuits fulfilling a total of 240 teaching hours. In addition, my research work was focused on the measurement of multi photon production and it was mainly carried out at CERN.

From 2016 up to 2021, I was working as a senior post doctoral researcher in Oklahoma State University (OSU). I have been mainly focused on Standard Model measurements, beyond Standard Model searches, jet substructure-related topics. I have supervised three degree projects of OSU students and a couple of PhD students. In addition, I have reviewed several analyses of the Exotic and SM groups within the ATLAS Collaboration. In 2018, thanks to my work involving photons, I was elected to be convenor of the Photon and Jets SM group within ATLAS Collaboration. This role was taken for two years until 2020. In 2020, I was elected to be analysis contact of the di-Higgs production measurement in bbVV channel. The duties of this role include organising team meetings, taking an active role in determining analysis priorities, setting targets and overseeing work on the analysis efforts. In 2020, I was also elected liaison of the jet tagging and Exotics group within the ATLAS Collaboration and in April of 2021, I have been elected as convener of the Jet Tagging group within ATLAS Collaboration.

In 2022, I was awarded with the Maria Zambrano grant for attraction of International talents to work as distinguished researched at university of Valencia. During my research career, I have contributed to several papers published in high rated journals about SM measurements, beyond SM searches, jet hadronic substructure and ATLAS LAr calorimeter performance. In addition, I have held convenorship positions in physics and performance groups within the ATLAS Collaborations.

I consider myself an experienced, responsible and self-motivated researcher. I have also shown to have creative thinking by developing many original ideas which lead to novel papers. I have experience in group collaboration and I can lead big teams. I like hard challenges, preferably never solved before. I'm not scared of time pressure or high levels of uncertainty.

Área Temática:	Ciencias matemáticas
Nombre:	LEITAO RODRÍGUEZ, ÁLVARO
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Título:	Efficient numerical solutions in applied mathematical finance

Resumen de la Memoria:

My research career has begun at the University of a Coruña, in the Department of Mathematics, where I worked, from 2011 to 2013, on mathematical modelling and efficient numerical methods (coupled with modern high-performance computing paradigms) for financial applications.

In 2013, I moved to the Netherlands to start my doctoral education awarded by a Marie Curie fellowship. I carried out my doctoral studies at the Delft Institute of Applied Mathematics in the Delft University of Technology (TU Delft) and the Scientific Computing research group of the Centrum Wiskunde & Informatica (CWI), the Ducth national research centre in mathematics and computer science. Besides the high-quality education received, this experience allowed me to build a strong network of international contacts in both academia and industry, which resulted in many future fruitful collaborations, both on new research (European) projects and scientific contributions.

In my first postdoctoral experience, just after my getting my PhD in 2017, I became BGSMath-María de Maeztu JUNIOR researcher in the Centre de Recerca Matemática (CRM), funded by the Barcelona Graduate School of Mathematics (BGSMath) after competitive call. During the almost two years I spent in this position, I started to define more precisely my own research lines, deepen into the development of extremely efficient mathematical and computational methodologies for highly complex problems, by incorporating advanced Fourier inversion techniques (based on wavelets and continuous-time Markov chains) to my expertise.

As a second postdoctoral position, in 2019 I moved again and I joined the Department of Mathematics of the University of A Coruña, awarded by a Juan de la Cierva-Formación grant, a very competitive Spanish research program. In particular, I got enrolled in the M2NICA research group, which is a leading group on applying mathematical models, numerical methods and high-performance computing to financial problems formed by consolidated researchers.

Since November 2021, I have been involved in an industrial contract promoted by the leading Spanish bank BBVA, with the aim of solving highly complex problems proposed by the bank employing sophisticated machine learning techniques.

The research line proposed for the RyC grant aims to deepen into and exploit a recently established connection between classical universal function approximators and the so-called quantum machine learning models. That powerful theoretical result relates an expected value with a truncated Fourier series through a quantum machine learning model given a particular quantum architecture. For that, the form of the involved quantum operators and structures need to be analyzed (and reformulated) to come up with "close-to" universal approximators with a controlled (reduced) circuit depth (as required for current quantum systems). This line of action will necessarily require to establish a connection between the proposed result and classical results. Particularly, I am interested in the application of both Fourier transforms and wavelet theory. All in all, the final objective is to develop quantum-based universal approximators which can potentially provide a quantum acceleration with respect to classical alternatives when applied to challenging industrial and scientific problems.

Resumen del Currículum Vitae:

Currently, I am an associate researcher in the CITIC research centre, hired in the framework of an industrial project jointly with the Spanish bank BBVA. Previously, I worked in the Department of Mathematics at University of A Coruña, in the Delft University of Technology (TU Delft, The Netherlands), in the Centre de Recerca Matemàtica (CRM), and in the M2NICA research group at University of A Coruña. The mentioned positions have been funded through different grants, obtained after competitive calls, like a Marie Curie fellowship, BGSMath-María de Maeztu JUNIOR, and Juan de la Cierva-Formación.

My research topic is focused on the development of efficient numerical techniques in financial mathematics, a discipline that lies at the intersection of numerical analysis and stochastic calculus. My expertise includes Stochastic Differential Equations, Monte Carlo integration, Fourier inversion techniques, Stochastic processes, Machine learning, PDEs, and Quantum computing, applied to problems appearing in the financial sector. Particularly, I am interested in hybrid solutions for advanced and challenging quantitative problems, combining several methodologies (including computation) aiming a satisfactory balance between precision, robustness, and performance. The smart and precise combination of these three components form my definition of "efficiency" in a solution and drives all my scientific contributions and interests. The progresses in my main research lines have a direct impact on the society since they contribute to the stability of the financial markets and the mitigation and prevention of future risks and crises. In addition, the advances achieved during my academic career have been successfully applied into other scientific fields, open promising research directions to be explored.

I have published a number of scientific articles in peer-reviewed journals like, among others, the well-known and highly ranked Applied Mathematics and Computation, Communications in Nonlinear Science and Numerical Simulation, Archives of Computational Methods in Engineering, or Journal of Computational and Applied Mathematics. Further, I have co-authored a couple of book chapters. Recently, I published my first book entitled "Modelos Matemáticos y métodos numéricos en finanzas cuantitativas: Con ejercicios y códigos en Python y Matlab", which intends to be a reference monograph in Spanish devoted to the topic of advanced mathematical modelling and computation in quantitative finance.

I have presented my academic work in multiple international congresses and conferences like ECMI (2014 and 2016), ICCF (2015, 2019 and 2022), SIAM UQ 2015, CMMSE (2017 and 2019), CEDYA/CMA 2021, or RSME-UMA 2022. Further, I have been invited speaker at the MathFinance in 2017, the Lorentz Workshop on Mathematics for Energy Markets in 2017, the QuantMinds International in 2018, the Financial Mathematics and Supercomputing in 2019 and the Webinar COVID-19: Forecast and Prediction in 2020. Recently, I was awarded with the recognition "Peter Carr Memorial Prize for Young Researchers". I participated in the organization and developing of several dissemination activities, like the international congresses, research meetings and mini symposiums for young researchers and training courses for master and doctoral students. I have supervised four master and one PhD theses.

Área Temática:	Ciencias matemáticas
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Título:	Scalable Bayesian inference for dependent data.

Resumen de la Memoria:

My scientific contributions targeted the development of scalable stochastic models useful to answer scientific questions in areas such as epidemiology, signal processing, and applied machine learning, using the large data sets currently available. One of the challenges in these applications is that many probabilistic models were not initially designed for parameter inference. They were developed to provide an accurate description of natural phenomena and are meant to be studied mathematically. Therefore, their application to the applied sciences is challenging. Similarly, many machine learning algorithms, although scalable to massive data sets, have been developed mainly for prediction and do not provide insights into the mechanistic nature of the phenomena studied. My work tackled these issues by combining these two approaches: developing models whose parameters can be efficiently inferred and their uncertainty quantified, and developing tailored algorithms to learn from data using these models. To this aim, I have been most actively working on four areas:

1. Computational statistics for big data in Bayesian statistics.
2. Coalescent inference, Population genetics, and molecular epidemiology.
3. Approximate inference for testing distributional changes.
4. Open science and reproducibility.

In the memoria, I describe each of these areas in more details, and I justify how my research trajectory equipped me with the right skills to deliver the project I am proposing as part of my application.

Resumen del Currículum Vitae:

My research focuses on developing stochastic models of complex systems motivated by concrete questions arising in applications – such as population genetics and applied mathematics. My contributions include computationally tractable methods and scalable algorithms that scientists can use. This includes tools for exploratory data analysis, methods for statistical inference, suitable algorithms, and theory validating the use of these three ingredients. In this respect, my work lies at the intersection of statistics, probability, and machine learning. Collaboration with labs in the Sciences producing the data and applying these methods is an essential component of this work.

I completed my PhD degree at Bocconi University in 2018, under the supervision of Prof. Stephen G. Walker (UT Austin) and Prof. Sonia Petrone. During my PhD, I spent roughly two years as a visiting scholar at the University of Texas at Austin in the Department of Statistics and Data Science, working with Prof. Walker on a novel class of recursive algorithms useful in scaling inference for Bayesian nonparametric to the massive datasets collected in modern applications. Such work resulted in four manuscripts, one already published and three under revision, and received important awards, such as Best Poster Award at the BNP conference 2017 (the leading conference in Bayesian nonparametric) and Best Paper Award at JSM 2018 (awarded by the American Statistical Association). I am currently working on the revisions of these papers since the commitment during my postdoc did not allow me to work on past projects.

After my PhD, I joined the Department of Statistics at Stanford University in 2018, mentored by Prof. Julia Palacios, where I spent approximately three and a half years. I continued working on scaling Bayesian computation, shifting the focus from algorithms to models. I employed ideas such as dimensionality reduction, coarsening, and equivalence classes to existing stochastic processes. We worked primarily on coalescent processes, a class of stochastic models of interest in Probability and Evolutionary Biology. This work resulted in three published papers and two under review in top Statistics journals, such as Annals of Applied Statistics, Journal of Computational and Graphical Statistics, and Genetics. The methods developed in these papers are motivated by concrete questions arising in population genetics, an area at the intersection between Genetics, Probability, and Statistics. In 2020, I joined a Covid-19 task force at Stanford University, which was dedicated to fundamental research (e.g., improving the understanding of the SARS-CoV-2 virus) and policy-making (e.g., advising the California public health department). This work resulted in three scientific publications in journals like Nature Communications and Statistical Science.

I joined the Department of Economics and Business at Universitat Pompeu Fabra (UPF) in January 2022, as part of the Statistics and Probability group. There, I am also an affiliated member of the Barcelona School of Economics. Since joining, I have been teaching both graduate and undergraduate classes, including a new course in Probabilistic Machine learning (Master in Data Science). I am also part of an effort to revamp a quantitative track offered to Econ undergraduate students.

Área Temática:	Ciencias matemáticas
Nombre:	BERGFALK BERGFALK, JEFFREY
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Título:	Set theory in homological and category and homotopy theoretic contexts

Resumen de la Memoria:

I am interested in a growing body of mathematics at the interface of set theory and algebraic topology, broadly understood. A persistent focus, for example, is the infinitary combinatorics of derived categories and, reciprocally, the cohomological behaviors of the transfinite. This is a mathematics with implications for concrete and longstanding questions in both fields including, most recently, the additivity problem for strong homology and related derived limits, and it tends to freshen and expand our notions of dimension in both areas. For example: a fundamental motif in much of my research is what set theorists call "incompactness phenomena," i.e., systems of local agreement that cannot be globalized. To algebraic topologists, such phenomena are patently (co)homological or sheaf theoretic in nature, and within these latter frameworks, classical set theoretic concerns like nontrivial coherence often appear as only the initiating n=1 instance of rich and otherwise unsuspected multidimensional structures. Underpinning these structures, in turn, are (n+1)-dimensional variations on the fundamental set theoretic technique of minimal walks (due to Todorcevic), variations which are closely related to the nth uncountable cardinal. These, for me, are areas of abiding and fundamental interest. A further theme in my work is the implications of definability considerations in classical computations: it can happen that all cocycles below a certain descriptive complexity threshold are coboundaries, for example; it can also happen that classically isomorphic cohomology groups may fail to be definably isomorphic, or, put differently, that complexity hierarchies within and among them harbor underappreciated levels of structure and information.

More lately, I grow additionally interested in problems of categorical localization, and in particular in the fifty-year-old problem of the existence (or not) of arbitrary cohomological localizations in the stable homotopy category; one final area of growing interest is in the set theory of condensed and pyknotic mathematics. Each of these affords ample and exciting opportunities for collaborations with researchers in Spain, and in Barcelona in particular, and this is part of the logic of my proposal.

Resumen del Currículum Vitae:

When I embarked, in 2010, on a graduate degree in mathematics, it was a substantial departure from my undergraduate training in literature. My doctoral trajectory was somewhat unexpected as well, for while set theoretic topology is, of course, a well-established mathematical tradition, a coordinated study of set theory and algebraic topology (even broadly understood) was, particularly at that time, far less of one. Over just the past five years, however, this situation has begun to change, as many of the publications listed in my abbreviated CV, among others, attest. A major stimulus to this development was research on a family of open questions tracing to a 1988 paper on the additivity of strong homology; it was in part for my, and coauthors', answers to those questions that I was awarded 2021's Mary Ellen Rudin Prize, an award (consisting of $10,000 cash together with multiple plenary talk invitations) which is conferred on one promising early-career researcher in topology each year.

At the University of Vienna's 2022 Summer Topology conference, Jan Van Mill introduced the award with the following remarks. His assessment is much kinder than any I myself would venture, but so concisely records the sort of achievement I aspire to that it seems worth including here. "In great generality, the main thread of Jeff's work to date can be described as exploring the interactions between the cohomology of topological spaces, homological algebra, and set theory from the standpoint of infinite combinatorics. In my opinion, his papers will come to be regarded as true breakthroughs in our understanding of the relationships between these broad and disparate subjects. The whole corpus of his work is very impressive for its breadth and depth. It is clear that Jeff has been a very generous and eager collaborator, and that several of his papers that are published or in preparation will stand as milestones in this area of applications of logic and logical techniques to cohomology."

This eagerness to collaborate I can unreservedly affirm. Ten distinct coauthors appear on my publications list, and I am, at present, collaborating with three more. Each of these projects was markedly international in scope, involving researchers working in multiple countries and representing a full range of career stages, from the most senior and distinguished (Shelah, Todorcevic) to the most junior (Bannister was an undergraduate when our joint work began). All this has been facilitated by regular research visits and international conference and seminar presentations and attendance; outside of my successive host institutions, I've given a total of thirty talks over the past nine years. Both this output and my research trajectory represent an exercise of leadership; I have also endeavored also to teach and guide earlier-career researchers wherever possible, roles I plan to take on yet more fully with the support of a Ramón y Cajal Fellowship.

Área Temática:	Ciencias matemáticas
Nombre:	PORTILLA CUADRADO, PABLO
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Título:	Aspectos topológicos de la teoría de singularidades

Resumen de la Memoria:

So far, my research has been oriented to the interactions between singularity theory and low dimensional topology. For example attacking problems regarding mapping class groups using techniques from singularity theory and viceversa. While generalizations of some of these problems to higher dimensions interest me, at the moment I am more focused in what I explain next.

Milnor's fibration theorem is a milestone in Singularity Theory that unveiled a vast amount of new insights and ways to understand singularities of analytic spaces. That theorem associates to each singular point in a complex analytic hypersurface, a locally trivial fibration: the Milnor fibration. Its fiber is called the Milnor fiber and the characteristic mapping class is the geometric monodromy. On one hand, we have that the Milnor fibration endows the sphere with the structure of an open book where the binding coincides with the link of the singularity. On the other hand, it is also a classical result by Milnor that the embedded topological type of the singularity is completely determined by the embedded topological type of its link in the sphere. Thus, the Milnor fibration contains all the topological information about the singularity.

Milnor also proved that the homotopy type of the Milnor fiber of a hypersurface singularity is that of a bouquet of certain number of spheres of real dimension half of the dimension of the Milnor fiber. This tells us that the information at the level of homology and cohomology is tractable. And literature shows so: it is natural that this path has been vastly studied in comparison to what we explain next.

The scenario changes completely if one is interested about the homeomorphism type of the Milnor fiber. When the dimension of the ambient space is equal to 2, then we are in the world of plane curve singularities which has been extensively studied (and still a matter of research). But when n>2 the topology of Milnor fibers of hypersurface singularities and their geometric monodromies are still far from being understood. The main objective of my research project is to create new tools to better understand the topology and the geometric monodromy of Milnor fibrations in higher dimensions.

We plan to achieve this objective by following the next two more concrete lines of research:
1) The construction of explicit Lagrangian spines for Milnor fibers of hypersurface singularities. This line includes a plan to prove a Weinstein Neihgborhood theorem for these kinds of Lagrangian spines which recovers the homeomorphism type of the Milnor fiber; and a theory of higher dimensional tête-à-tête polyhedrons: these will be higher dimensional versions of tête-à-tête graphs which are 1-dimensional CW complexes equipped with a metric with a special property that allows one to recover a homeomorphism of surface that contains them as a spine. The final goal of this research line is to be able to relate the resolution process and the monodromy of the singularity.
2) Break the Milnor fiber into pieces to which the monodromy restricts as a periodic map. Generalize the splicing operation to higher dimensions to be able to tackle the problem of understanding the topology of the Milnor fiber and its geometric monodromy by breaking it in simpler and more understandable pieces.

Resumen del Currículum Vitae:

Currently, I am a postdoctoral researcher at Laboratoire Paul Painlevé at Université de Lille in Lille, France. Before this, I was a postdoctoral researcher at CIMAT in Guanajuato, Mexico for two years and previously, I worked for one year at UNAM (Unidad Cuernavaca). I received my PhD from Universidad Complutense de Madrid in June 2018. I was a student of Javier Fernández de Bobadilla and María Pe Pereira.
My general area of research is Singularity Theory. I am interested in the interactions of singularity theory with other areas such as low dimensional topology. Currently I work on the understanding of the geometric monodromy of higher dimensional Milnor fibrations and so sympletic topology and Lipschitz geometry are of my interest as well.

Among the results I obtained, I highlight:
(1) In "Positive factorizations of pseudoperiodic homeomorphisms" published in Mathematische Annalen, I give a generalization of a classical result of Picard-Lefschetz theory of the Picard-Lefschetz theory which establishes that monodromies associated with reduced holomorphic map germs defined on isolated complex surface singularities, admit positive factorizations (they are a product of positive Dehn twists). This result makes extensive use of the the theory of deformation of strongly pseudo-convex surfaces as well as a classical solution to the Neumann DBAR problem.

(2) A new characterization of the geometric monodromy group of an isolated plane curve singularity. As important corollaries, we obtain: (a) An efficient criterion (the vanishing of a simple line integral) for deciding whether a simple closed curve given in the Milnor fiber appears as the geometric vanishing cycle associated with a nodal degeneracy in the versal unfolding (b) the non-injectivity of the monodromy representation of the versal unfolding of a plane curve singularity which answers (except in a finite family of cases) an old question by Sullivan. Note that although this negative answer was expected, there had been no progress in this question in the last 20 years.

My research has been thoroughly communicated to the community by presenting it in numerous international congresses and seminars where I have been invited as a specialized researcher.

I have experience as a teacher with around 180 hours ranging from bachelor courses to specialized courses in several national and foreign institutions. Regarding the training of young researchers I highlight a 20h PhD course in differential topology given at BCAM (Bilbao), as well as a specialization course in singularity theory at Seoul National University.

It is visible from my CV that my circle of collaborators is not limited to some fellow national colleagues but I rather have created links with researchers in universities with which I had no connection a priori. My numerous stays abroad (Columbia University, Northeastern University (USA), VIASM (Vietnam), Seoul National University (Korea)) and my three postdocs (in Mexico and France) , show that I have created valuable links with very diverse members of the community, some of them already materialised in articles.

Finally I would like to note that I am an active member of the community not only as a researcher but also as an organizer of events and activities (an online seminar and 2 international congresses).

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática: Ciencias sociales
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Título: Gender studies and the digital sphere

Resumen de la Memoria:

My scientific career has been characterized by the adoption of interdisciplinary and intersectional feminist approaches to the study of agency, subjectivity, and social change. My main contributions include an innovative framework for the study of public sexual violence in the Egyptian January 25th Revolution and activist responses to it as well as an examination of the potential, limitations, and paradoxes of interstitial spaces for Saudi women's activism for the right to drive. The results of my research have been published in academic journals, book chapters, and e-zines, and have been presented in leading academic congresses. My career has greatly benefited from stays in research institutions in the USA, Europe, and the MENA region, including the Europa-Universität Viadrina (Germany), where I completed a Master of European Studies; as a visiting researcher at the Chaire UNESCO La Femme et ses droits of the Université Ibn Tofaïl (Morocco); as a Global Scholar at the Institute for Research on Women at Rutgers University (USA); as a PhD student at the Department of Women's and Gender Studies at Rutgers University (USA); the Inter-University Centre Dubrovnik, where I participated in a summer course; as a visiting scholar at the Institute for Gender and Women's Studies at the American University in Cairo (Egypt) to conduct fieldwork research; and as a Visiting Student Researcher at the University of California, Berkeley (USA). As a postdoctoral researcher in Dimmons (IN3, UOC), I have participated in national and international competitive research projects, including "Gender equality qualities of the platform economy. A framework of analysis," funded by the Ministerio de Ciencia e Innovación, and the COST Action Platform Work Inclusion Living Lab (P-WILL), funded by the European Cooperation in Science and Technology. I am responsible for the line of research on gender at the Barcelona UOC Chair in Digital Economy, where I am in charge of the scientific coordination of the VIII Congress of Feminist Economy (Barcelona, 16-18 March 2023). I have also participated in the writing of the resubmission proposal "Platform economy and gender equality: Policies and models design" for an ERC Consolidator Grant. Prior to this, I co-founded the research collective Theorizing MENA Bodies, where I co-organized panels at major conferences. I have editorial experience in the Journal of Middle East Women's Studies, Al-Raida, and Signs: Journal of Women in Culture and Society, and have participated in the digital humanities project Signs@40: Feminist Scholarship through Four Decades. With the Ramón y Cajal grant, I want to pursue a line of research that redefines gendered violence in the workplace in a context marked by the expansion of new models of work mediated by digital technologies, notably following the COVID-19 pandemic, and develops a framework of analysis that can inform the design of quantitative data gathering instruments. I will use qualitative methods to draw the contours of the problem from an intersectional perspective that centers the (gendered, classed, raced) experiences of female platform workers. The research will document platform workers' individual and collective strategies of avoidance and resistance towards gendered violence and address platforms' responsibility towards their workers' safety and well-being.

Resumen del Currículum Vitae:

I am a postdoctoral researcher at the Dimmons Research Group of the Internet Interdisciplinary Institute (IN3) at the Universitat Oberta de Catalunya (UOC). I have a PhD in Women's and Gender Studies from Rutgers University (USA), a Master in Political Analysis from the UOC and a Master of European Studies from the Europa-Universität Viadrina (Germany), and a BA in Journalism from the Universitat Autònoma de Barcelona. I have complemented my training with international stays in research centers in Morocco, Egypt, and the USA. My current research focuses on questions of gender in digital settings from an intersectional perspective. At Dimmons, I participate as a researcher in the project "Gender equality qualities of the platform economy. A framework of analysis," funded by the Ministerio de Ciencia e Innovación, and as a European project coordinator in the COST Action Platform Work Inclusion Living Lab (P-WILL). I am also responsible for the line of gender in the Barcelona UOC Chair in Digital Economy. In this capacity, I am responsible for the scientific coordination of the VIII Congress of Feminist Economy (Barcelona, 16-18 March 2023). My previous research examined activism against public sexual violence in Egypt and for the right to drive in Saudi Arabia with a focus on the interstices between public and private, offline and online spaces. I have published single and co-authored articles in Gender, Place & Culture and the Journal of Middle East Women's Studies as well as in the open-access journals Kohl: A Journal for Body and Gender Research, Anuario Del Conflicto Social, and Journal of International Women's Studies. I have also published single-authored book chapters in Freedom Without Permission: Bodies and Space in the Arab Revolutions and Beyond the Square: Urbanism and the Arab Uprisings. I have a forthcoming article in Signs: Journal of Women in Culture and Society and a co-authored chapter in the book Young People Shaping Democratic Politics: Interrogating Inclusion, Mobilising Education. I have been invited to present my work at Yale University, the California State University Long Beach and the American University of Beirut. I have presented the results of my research in international congresses, including the meetings of the National Women's Studies Association (NWSA), the Middle East Studies Association (MESA), and the World Congress for Middle Eastern Studies (WOCMES), where I have co-organized panels as part of the research collective Theorizing MENA Bodies. I have editorial experience as a co-editor of the section "Third Space" in the Journal of Middle East Women's Studies and the special issues "Gender and Revolution" in Al-Raida and "Gendered Bodies in the Protest Sphere" in Signs: Journal of Women in Culture and Society. In 2013-14, I was an assistant editor in the digital humanities project Signs@40: Feminist Scholarship through Four Decades. During my doctorate, I have been awarded two Excellence Fellowships, a Special Study Opportunity Award and a Louis Bevier Fellowship. Upon my graduation, I was awarded a 2019 Outstanding Doctoral Student Award. Prior to my doctoral studies, I received a DAAD/La Caixa Scholarship to pursue postgraduate studies in Germany in 2002-04.

Área Temática: Ciencias sociales
Nombre: MANIGLIO , FRANCESCO
Referencia: RYC2022-038064-I
Correo Electrónico: franmgl@gmail.com
Título: Tecnopolítica de las Identidades. Dinámicas comunicativas y fronterizas de la migración (Techno-Identity)

Resumen de la Memoria:

La trayectoria del solicitante se caracteriza por una oportuna contribución científica a la comprensión de los fenómenos ligados a la "desigualdad social desde una perspectiva sociologica interdisciplinar". En primer lugar la comprensión y evaluación de la reproducción social, analizando las políticas de investigación, innovación y educación superior desde una perspectiva global y crítica. En segundo lugar, propone un enfoque político-económico de estos temas basado en un desarrollo original de las recientes aportaciones en los estudios de la sociología de la educación y conocimiento, de la comunicación y cultura. En tercer lugar, presenta un análisis empírico riguroso y detallado de los materiales, recurriendo a métodos actualizados de la comunicación y del análisis crítico del discurso. En cuarto lugar propone la análisis de los procesos de inclusión diferencial de la fuerza trabajo (migraciones altamente calificadas). El resultado global de su trabajo es una contribución pionera al estudio de la sociologia de la comunicación y del conocimiento en la UE, América Latina y Estados Unidos, cuya relevancia e importancia va más allá de las áreas específicas cubiertas por su investigación. La producción científica del solicitante alcanza 38 publicaciones (de ellas 23 son artículos de revistas), en línea con los criterios de evaluación de ANECA para la categoría de Profesor Titular de Universidad en la rama de Ciencias Sociales y Jurídicas con Calificación A (http://www.aneca.es/Programas-de-evaluacion/Evaluacion-deprofesorado/ACADEMI A/Criterios-Diciembre-2019). ANECA especifica que entre los 20 artículos de revista un mínimo de 10 debe pertenecer a los niveles 1 y 2. Por esto el solicitante ha presentado en el CVA 12 artículos de revista perteneciente a los niveles 1 y 2 ANECA, donde, en su mayoría (9 sobre 10), se presenta como primer autor. Más precisamente 6 de estos pertenecen al nivel 1 y otros 6 al nivel 2. Todos pertenecen al índice SJR /SCOPUS; 5 de estos pertenecen también al índice JCR; además 1 pertenece a la categoría máxima ANVUR A del sistema de ciencia y tecnología de Italia. La producción científica ha sido publicada en revistas nacionales y sobretodo internacionales en ingles, español, portugués e italiano.

Resumen del Currículum Vitae:

Francesco Maniglio posee un perfil investigador interdisciplinar. Es investigador distinguido en la Universidad de Sevilla por el programa postdoctoral María Zambrano, donde desarrolla el proyecto de investigación Tecnopolítica de las Identidades. Dinámicas comunicativas y fronterizas de la migración en Europa. Fue profesor de doctorado del departamento de Sociología de la Universidade de Brasilia (Capes 7) e investigador adjunto del Programa de Posgrado en Desarrollo Sostenible y Desigualdades Sociales en la Región Andina (TrAndeS- Freie Universität Berlin). Fue profesor principal, director del programa de Master en Ciencias Sociales (mención en Comunicación) y director del grupo de investigación Estudios Críticos para la Justicia Social (ECJS) de la Universidad Técnica de Manabí (Ecuador). En el bienio 2017-2018 fue director de investigación del Centro Internacional de Estudios Superiores en Comunicación para America Latina y profesor invitado en diferentes programas de posgrado en Comunicación y Ciencias Sociales de universidades de México, Uruguay, Ecuador y Brasil. En 2018 ha recibido el "Premio 40 años de la Revista Crítica de Ciencias Sociales" del Centro de Estudios Sociales (CES) de la Universidad de Coimbra y en 2020 el "Premio Res Publica" de la Fundación Res Pública de Portugal.

Área Temática: Ciencias sociales
Nombre: POPESCU POPESCU, BOGDAN
Referencia: RYC2022-035451-I
Correo Electrónico: b_g_popescu@yahoo.com
Título: Historical Political Economy

Resumen de la Memoria:

1. Bogdan G. Popescu. (Forthcoming) Imperial Borderlands: Institutions and Legacies of the Habsburg Military Frontier. Cambridge University Press. Book Accepted for Publication and Under Contract (Contract signed 05/10/2022)

My first book, titled "Imperial Borderlands: Institutions and Legacies of the Habsburg Military Frontier," was accepted for publication and is under contract with Cambridge University Press examines how states use extractive institutions as a domestic response to external threats. The book uses a multidisciplinary approach to offer an answer to the puzzle about why some former regions of the Habsburg empire have more favorable long-run outcomes. I organized an international book workshop at Bocconi University in which I invited world-class scholars, including Harvard Business School, Michigan, Princeton, and University College London. I moderated the discussion, recorded the recommendations, and implemented them.

2. Bogdan G. Popescu. 2023. "The Developmental Legacies of Border Buffer Zones: the Case of Military Colonialism." Journal of Historical Political Economy. Forthcoming.

An article from the book is also forthcoming in the Journal of Historical Political Economy, an academic outlet publishing cutting-edge work in political economy from a historical perspective.

3. Bogdan G. Popescu and Mircea Popa. 2022. "Imperial Rule and Long-run Development: Evidence on the Role of Human Capital in the Ottoman Europe." Comparative Political Studies. Vol. 55: No. 11, pp. 1910-1946.
https://doi.org/10.1177/00104140211060283. Web of Science Impact Factor: 3.955

In "Imperial Rule and Long-Run Development" (with Mircea Popa, Comparative Political Studies, 2022 – Web of Science Impact Factor: 3.955), we investigate another way rulers can respond to threats. Specifically, the article focuses on how historical states prohibited the emergence of the printing press to deal with threats stemming from domestic opposition.

4. Maura Cremin and Bogdan G. Popescu. 2021. "Sticks and Stones? Connecting Insurgent Propaganda with Violent Outcomes," Journal of Conflict Resolution. Vol. 66: No. 3, pp 504-528. https://doi.org/10.1177/00220027211027291. Web of Science Impact Factor: 3.211

In "Sticks and Stones?" (with Maura Cremin, Journal of Conflict Resolution, 2021 – Web of Science Impact Factor: 3.211), we study threats against modern states. These are threats emerging from non-state actors. We analyze the relationship between propaganda content and subsequent attacks. Our findings indicate that propaganda that highlights key military adversaries may play a role in directing would-be attackers that are outside the control of the organization's hierarchy.

5. Mike Albertus and Bogdan G. Popescu, 2020. "Does Equalizing Assets Spur Development? Evidence From Large-Scale Land Reform in Peru," Quarterly Journal of Political Science. Vol. 15: No. 2, pp 255-295. https://dx.doi.org/10.1561/100.00019033. Web of Science Impact Factor: 2.688

The book and the related articles support a broader research agenda about how political elites deal with threats and their repercussions. In "Does Equalizing Assets Spur Development?" (with Mike Albertus, Quarterly Journal of Political Science, 2021 – Web of Science Impact Factor: 2.68), we focus on how landed elites respond to threats from industrial elites and the type of measures they adopt to ensure their survival.

Resumen del Currículum Vitae:

I have a highly international career, having worked at various top institutions in the USA, the UK, and Italy: the University of Chicago, Princeton, Oxford University, and Bocconi. These learning and professional experiences have allowed me to have significant cross-cultural exposure and adopt a multidisciplinary approach to my research.

I completed my Ph.D. in Political Science at the University of Chicago, US, in 2018. This education allowed me to learn from the leading scholars in these three fields. This is reflected in my doctoral dissertation, which explored center-periphery relationships and long-term repercussions in the Habsburg and Ottoman Empires context.

After obtaining my Ph.D, I pursued a first postdoctoral fellowship between 2018 and 2019 at Princeton University, US. This included a research grant worth $65,000 and entailed managing a team of three research assistants who helped me collect the first data for my book project – now under contract and coming out with Cambridge University Press in 2023. This fellowship allowed me to complete my first piece in the Quarterly Journal of Political Science (Web of Science Impact Factor: 2.688), coauthored with Mike Albertus from the University of Chicago.

After my tenure at Princeton, I received a second fellowship as part of an ERC grant – SpoilsOfWar (project number: 803644). Prof. Tamas Vonyo led this project at the Dondena Center for Research of Social Dynamics and Public Policy at Bocconi University, Italy. On this occasion, I also managed a team of three research assistants. I published a series of articles in top journals that speak to my research agenda, exploring how state actors respond to external and internal threats. The first piece, with Maura Cremin, came out in the Journal of Conflict Resolution; the second piece, with Mircea Popa, was published in Comparative Political Studies. These are high-impact factor journals in political science: the Journal of Conflict Resolution has a Web of Science impact factor of 3.211, and Comparative Political Studies has a Web of Science Impact Factor: 3.955. At Bocconi, I completed my first book manuscript – Institutions and Legacies of the Habsburg Military Frontier. I also organized an international conference with participants from leading departments, including Harvard, Princeton, and Michigan, who read and helped create a better book manuscript.

In 2022, I became a Departmental Lecturer at the University of Oxford, UK, where I taught undergraduates in the Politics, Philosophy, and Economics program. At the same time, I developed new projects relating to the role of social capital in spreading right-wing votes. I also started a new project focusing on the role of the Industrial Revolution in the development of the English language and class in Britain. While at Oxford, I made substantial progress toward a second book manuscript, which examines the impact of the limited availability of the printing press in Islamic Empires for human capital accumulation and economic development. Lastly, since January 2023, I have been an Assistant Professor at John Cabot University, Italy.

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Total Production:
Total books: 1 (1 Cambridge University Press book)
Total peer-review journal articles: 7 (4 TOP articles)
Total published working papers: 2

H Index and other impact indicators:
Total Citations Google Scholar: 16
H-index Google Scholar: 2

Área Temática:	Ciencias y tecnologías de materiales
Nombre:	LÓPEZ SÁNCHEZ, JESÚS
Referencia:	RYC2022-035912-I
Correo Electrónico:	jesloppez@gmail.com
Título:	Development of unusual nanophases by sol-gel chemistry for, gas sensing, permanent magnets and advanced information technologies

Resumen de la Memoria:

Jesús López Sánchez belonged to the Surface Science and Nanostructures Laboratory and he obtained his PhD in Physics in 2018 by the Complutense University of Madrid (Spain) through a FPI grant awarded by the Spanish Government. The research was focused on a deeply study of the physical and chemical basics of sol-gel synthesis method applied to the production of the high-coercivity ε-Fe2O3 phase in nano- and micro-particle form. He also performed several pre-doctoral international stays: Colorado State University-CSU in USA (2 months-2014) and CRG-BM25 beamline at the ESRF in France (4 months-2015, 4 months-2016).Subsequently, a postdoctoral research was carried out at the Applied Magnetism Institute (IMA) until May 2020, mainly focused on the growth of ferrites and magnetic carbides, combining the optimization of amorphous soft magnetic materials, and the design of dense composites (ferrites/mesoporous graphene) with magnetic and microwave technological interests. Afterward, he was working in the CRG SpLine beamline BM25 located at The European Synchrotron-ESRF (Grenoble) until June 2022. He was dedicated to structural investigations using hard X-ray scattering mostly in ultrathin films, specialized on the combination of diffraction and spectroscopy techniques. Currently, he belongs to the CSS group at the ICV-CSIC, working on the industrial project INESCER generating functional nanostructures in ceramic glaze with unusual responses. In addition, he is also focused on "Replacing REE permanent magnets by novel magnetic metastable phases with competitive performances" and "Development of an advanced wireless technology for multiferroic switching response by light modulation".

Resumen del Currículum Vitae:

Jesús López Sánchez is carrying out his scientific activity in the CSS group at the ICV-CSIC working on the industrial project INESCER generating functional nanostructures in ceramic glaze with unusual responses, leading his own research line. He is also involved in recycling rare-earth magnets through the EIT Raw Materials (INSPIRES) and contributing to the project NANOLUMBRE with the development of multiferroic / plasmonic nanosystems for information technologies. The topics reveal the highly multidisciplinary, technological, and versatile nature of his research since he is acquiring a great experience in the output of novel functionalities to large-scale systems and innovative industrially scalable routes. His research covers from the conceptualization to the implementation of real solutions for the society coming from unusual properties generated by metastable phases based on graphene mesostructures, intermetallic oxides and magnetic carbides. The materials are synthesized by sol-gel chemistry and mechanical milling, obtaining multipurpose systems with tunable physical responses to an external stimulus applied. Specific solutions are the development of electromagnetic shielding technologies, NO2 gas sensors, and providing magnetic carbides for cancer therapies.

His research also involves the regular use of advanced characterization tools including micro-Raman spectroscopy and synchrotron radiation, as well as the design of instrumentation to combine different X-ray absorption and diffraction experimental set-ups, working under non-standard conditions. He participated in the start-up and fine-tuning of the CRG-BM25 SXD beamline by the ESRF upgrade (EBS), obtaining a strong training in large facilities instrumentation. There are only three beamlines worldwide dedicated to surface XRD, making him a pioneer in this field.

The researcher shows strong national and international collaborations. He co-authors 3 patents and 33 articles (SCI journals) with over 387 citations, an average impact factor of 5.93, and an h-index=11. 91% of publications are Q1 and 82% come from international collaborations. He has participated in over 59 contributions on Conferences, of which 39 are international, 42 oral contributions and 2 invited talks.

He has contributed to 12 research projects, by which 2 are European projects and 1 from a private company. In addition, he has been PI of 8 ESRF projects and performed >73 ESRF experiments. He also performed several international stays: Colorado State University-CSU in USA (2 months-2014) and CRG-BM25 beamline at the ESRF in France (4 months-2015, 4 months-2016, and 2 years-2020/2022). He has been selected for competitive grants such as "María Zambrano" (CT19/22), "JDC" (FJC2019-040085-I), and "FPI" (BES-2013-063879). His research activity has been awarded with 2 PhD thesis prizes: "Extraordinary Prize, UCM" and "SpLine thesis award 2019". He obtained the positive evaluation from ANECA (PAD, PCD and PUP) and he was Surface Science and Interfaces Lab Professor (UCM).

He also has solid training skills with a co-direction of 9 master theses, 4 international PhD student stays, and 2 PhD students (UCM). Moreover, he was Associate editor of the EMSA 2022 Conference, and he belongs to the scientific committee of the European association EMASST and the committee on dissemination, equality, and communication (ICV-CSIC).

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática:	**Ciencias y tecnologías de materiales**
Nombre:	SANZ DE LEÓN, ALBERTO
Referencia:	RYC2022-036052-I
Correo Electrónico:	alberto.sanzdeleon@uca.es
Título:	Desarrollo de nanocomposites multifuncionales para fabricación aditiva

Resumen de la Memoria:

Alberto Sanz de León (ASdL) carried out his predoctoral stage (2011-2015) at the ICTP-CSIC, where he was trained in the fields of polymer chemistry and surface science, producing very good results as reflected in his doctoral thesis. He proved that he was able of synthesizing new block copolymers and using a wide variety of characterization techniques such as SEM, fluorescence microscopy, Raman microscopy, infrared spectroscopy, contact angle or AFM. He also demonstrated that he was also able to identify applications in which these porous films could be used, with potential practical uses in the field of materials for biomedicine and catalysis.

In April 2016, he joined the Mechanobiochemistry group of the MPIKG as a postdoctoral researcher. This independent research group, led by Dr. Kerstin Blank, worked on the synthesis and characterization of hydrogel biomaterials as biomechanical sensors to measure cellular interactions at the molecular level. His research was done in collaboration with the Theoretical physics group of the University of Leipzig, which allowed the development of a model that allows predicting the mechanical properties of these materials.

Since May 2018, he works in the research group led by prof. Sergio Molina at the University of Cadiz. The research lines of this group can be broadly summarized in two main fields: advanced electron microscopy techniques for nanomaterials and additive manufacturing of polymers and composite materials. In this environment, he joined the research group as an expert in polymer chemistry, being able to complement his background with the training offered by the group in the use of additive manufacturing technologies. Since then, he has consolidated his career at the UCA thanks to being awarded with the Juan de la Cierva Incorporación fellowship in July 2020.

Alberto has managed to promote a research line in the synthesis and characterization of new functional nanocomposites, where the extensive knowledge acquired by the research group in the field of advanced electron microscopy techniques is combined with that of additive manufacturing. In the last 5 years, since he arrived to UCA, he is the coauthor of 17 publications, of which he is the corresponding author of 13 of them.

Moreover, he has been the director of the doctoral thesis of Ms. Wera Di Cianni, in an international co-supervision agreement between the University of Cádiz and the University of Calabria. This doctoral thesis, defended in March 2023 has produced 3 articles on the nanofabrication of polymer nanocomposites. In addition, he has supervised 7 bachelor and master theses, of which 2 obtained such promising results that they served as the starting point for further publications.

Alberto has shown his leadership skills throughout all his research career, by being awarded with different pre- and post-doctoral fellowships (JAE-Pre, FPU, DAAD for short stays, Humbodlt, Juan de la Cierva- Formación, Juan de la Cierva-Incorporación), which has always allowed him to investigate independently since the beginning of his research career. In addition, he has been the principal investigator of his Humboldt fellowship's project, as well as of a CEIMAR project, in a call for young researchers.

Resumen del Currículum Vitae:

Alberto Sanz de León (bachelor degree in Chemical engineering – with honors–, University of Sevilla and PhD in High Specialization in Plastics and Rubber, International University Menéndez Pelayo) is currently a Juan de la Cierva Incorporación postdoctoral researcher at the University of Cádiz. His scientific production is summarized in the realization of 35 publications (33 of them in the first quartile, Q1), 41 presentations in conferences, participation in 14 research projects of regional, national and international scope and the co-authorship of 2 patents. According to Google Scholar, he has 525 citations and a h index of 14.

His research combines his acquired knowledge in synthesis and characterization of functional polymers for biomedical applications (predoctoral training, 2010-2015, Institute of Science and Technology of Polymers, ICTP-CSIC), rational design of novel biomaterials as mechanic biosensors (postdoctoral training, 2016-2018, Max Planck Institute of Colloids and Interfaces, MPIKG) and the development of new functional polymers and (nano)composites for 3D printing technologies (2018-so far, University of Cádiz, UCA).

Throughout his whole scientific career, he has demonstrated a great capacity to receive funding so he can carry out his research in an independent manner. Since 2010 he has been awarded with the IMDEA scholarship for young researchers (2010); predoctoral JAE-Pre (2011) and FPU fellowships (2011); DAAD fellowship for short internships in Germany (2013) and Humboldt (2016), Juan de la Cierva formación (2018), Juan de la Cierva incorporación (2020) and Junta de Andalucía-doc postdoctoral fellowships (2020). His career has a high degree of internationalization with stays and contracts in centers of internationally recognized prestige, with two short stays abroad (3 months at the Institut Charles Sadron, Strasbourg and 6 months at the Freie Universität, Berlin) during his predoctoral stage and one postdoc for 25 months at the MPIKG.

He has been awarded in different conferences with the best poster (International Symposium of Functional Biointerfaces, FU Berlin 2016) or oral communication (4th IMDEA Early Stage researchers in nanoscience 2014).

He has been the Erasmus+ coordinator of training of chemistry students at the MPIKG during 2017-2018, supervising the training work of different students at the MPIKG. He has directed one international doctoral thesis in a co-supervision agreement with the University of Calabria, which led to 3 publications and was defended in March 2023. Moreover, he has directed 7 Master/Bachelor theses in the degrees of Biotechnology, Nanoscience and Technology of Materials and Medicinal chemistry.

He has participated in different dissemination activities. For instance, since 2018, he organizes a workshop during the European researcher's night. He also led an initiative to 3D-pint art paintings for blinded people which was exhibited in collaboration with the council of Malaga and has also been invited speaker in a workshop of Technological innovations for accessibility to heritage. All this situates him in a prominent position as a young researcher to contribute to major scientific and technological advances and keep up with his career to eventually become a consolidated researcher and a future group leader.

Área Temática:	Ciencias y tecnologías medioambientales
Nombre:	RODRIGUEZ PERTIERRA, LUIS ALBERTO
Referencia:	RYC2022-036444-I
Correo Electrónico:	luis.pertierra@gmail.com
Título:	ANTBIOCHAN Examining the processes of global change affecting Antarctic terrestrial biodiversity

Resumen de la Memoria:

My career since 2009 has been primarily focused in advancing the basic scientific knowledge on the state of biodiversity at Polar Regions while also developing applied management toolsets. During this time, I have conducted a PhD thesis, followed by 10 years of postdoctoral research. These include a national 2-year postdoctoral contract Juan de la Cierva - incorporation, and two international postdocs (one 9-month junior at the Australian Antarctic Division, and one 2-year senior at the University of Pretoria - UP). I have also served as research technician at three research projects from two Spanish institutions, being also a visitor scientist in four institutions of Australia, Brazil and United Kingdom. In addition, I have also carried out Service Contracts for other three universities. Over my PhD and postdoctoral studies, I have taken part in 8 Spanish national research projects, being an international participant of another 4 (Chile, France and Australia). I have also secured 2 international research grants to lead and conduct 2 micro-projects as the principal investigator. As part of these research lines I have taken part in seven Antarctic field research expeditions and two sub-Antarctic (Macquarie, Marion). To share my research findings I have kept an active presence in scientific publication, balancing out the production of a number of polar-specific journals (e.g. Ant.Sci, Pol.Biol.) together with globally themed ecology (e.g. Ecography, Div. Distrib., J. Biogeogr.), multidisciplinary (e.g. Science, PNAS) and environmental journals (e.g. Eco.Ser., J.Clean.Prod., J.Env.Manag.). My contributions are heavily cited and in multiple cases have been placed at top 10% citation (e.g. Hfp-dataset & MERRAclim dataset).

To further disseminate my results, I have taken part in >10 international and 2 national conferences involving polar and non-polar themes and given several invited seminars at >10 different academia and research institutions from 8 different countries. To maximize social outreach, I have been engaged in science communication to the public with numerous printed and online articles (e.g. El País) and wide press releases. I have given seminars in public acts like "Day of Antarctica" (2015) in the CSIC-MNCN or "Pint of Science" (2019) in UJRC. I have been interviewed in three different radio stations (RNE, SER, COPE). I have taken part in TV documentaries and broadcasts like "Informe Semanal" (2010). I am also active in social media through my professional twitter account.

As part of my knowledge-transfer to early careers I have mentored 6 undergrad hons students, 2 master and I am co-menthoring a PhD student. I have lectured at 3 Spanish unis (UAM, URJC and UCM) and 1 in South African (UP). I also actively support early career scientists through leadership in polar associations (e.g APECS). I am an active scientific advisor to the Antarctic Treaty, both nationally (to the Spanish Polar Committee) and internationally (Scientific Committee of Antarctic Research - SCAR). I have co-developed international environmental protocols on area protection, tourism regulation and biosecurity, while also taking part in practical actions such as three species eradications. I have been involved in the development of the ANTICON programme of SCAR. I have a consolidated network of collaborators from +20 countries and institutions.

Resumen del Currículum Vitae:

Research line: basic and applied research on the drivers, pressure, state, impact and response to global environmental changes of the singular biodiversity from polar regions.

Number of publications: 50 JCR articles, 3 chapters in books, 2 PR technical reports.

First author: 16 Last author (supervisor): 5.

Indicators: Google scholar: 1501 citations. 1203 since 2018. H-index: 21. H-last 5 yrs.: 19.

i10 index: 34. i10-last 5 yrs.: 31. Most cited: 186 citations. Works >100 citations: 3 articles.

Competitive funding obtained: ~781.000 € (total). As P.I./main recipient: ~288.000 €

Scientific and technical capabilities. Geospatial analyses. Advanced max likelihood statistics & bayesian analyses. Species distribution modelling (SDM). Big data mining and analysis. Plant and invertebrate taxonomy & systematics. Phylogenetics and metagenomics. Experimental macro-physiology. Environmental policy advisory. R Programming. Languages.

Scientific responsabilities. Project management as P.I./sole investigator/host supervisor (5) or project team participant (8). Roles include: co-designer/developer, financial manager, recruiter, field expeditioner, lab experimenter, data analyser and results publisher/disseminator. Early career mentor/field supervisor/trainer. Conference/workshop organizer and/or attendant. Academic lecturer. Journal/project/grant referee. Institutional advisor/assessor to national and international Antarctic Treaty parties. Outreach speaker.

Leadership. Project leader x3 (Spain, UK, Australia). Field expedition leader x4. (Spain, Australia, South Africa). Grant host supervisor x2. Ability to establish international projects (ASICS EU-Biodiversa). Over 20 articles as lead or senior conceptual developer. Executive position of polar institutions: APECS-Spain and SCAR international.

Technical and innovation development. Development of critical thermal limit aluminium thermoblocks and 3D printed field stakes. Creation of R scripts (github). Photometry.

Dissemination/Outreach. Attendant and oral/poster presenter at 12 international conferences, and co-organizer of a national symposium. Invited seminar guest talk at over 20 academic/research institutions of 10 countries. Participation in TV documentaries (e.g. Informe Semanal - TVE, A3-news). Online/printed press: El Pais, La Vanguardia, El Mundo (e.g.). Radio: SER/COPE/RNE interviews. Open talks in schools, auditoriums and museums of Spain. Active twitter social media feeds @luisrpertierra. Open science event organizer like "Day of Antarctica" (2015, 2017) in the CSIC-MNCN or "Pint of Science".

Collaboration with industry and public institutions. Trainer on environmental affairs of the Spanish polar program. Advisory to the Spanish ministry of science, defence and international affairs reviewing and/or developing >10 environmental protocols of conduct. Execution of two non-competitive contracts to the Spanish government (alien species eradication act of 2015 and course on Antarctic research matter 2011).

Research training. Co-supervision of one PhD student (2019-2023), 2 MsC and 6 Hons students. Host supervisor of 2 grant awardees. Mentor of APECS-Spain.

Lecturing. >300 h of academic lecturing at universities of Spain (3), UK (1) and South Africa (1). Includes undergrad, masters and doctorate courses. Preparation of teaching material.

Área Temática:	**Ciencias y tecnologías medioambientales**
Nombre:	PERALTA SANCHEZ, JUAN MANUEL
Referencia:	RYC2022-036147-I
Correo Electrónico:	jmps@ugr.es
Título:	Ecología de las comunidades bacterias de aves

Resumen de la Memoria:

My main line of research studies the role that bacteria play in the evolution of life history traits in birds. During my research life I have acquired since the very beginning of my doctoral thesis, from the field biology to the molecular ecology, from the field to the molecular and microbiology laboratory. My line of research started with my doctoral thesis when I explored the relationship between the role of bacterial community on eggshell in reproductive life history traits of birds, especially the effect of the microbiota on hatching success. Most of my scientific production highlight the importance of bacterial density and community in the reproduction of birds, a topic that has increased enormously during last decade.

Due to problems with DNA extraction, my thesis was based primarily on culture-dependent techniques and antagonism tests. After several years of arduous efforts, we developed an efficient DNA extraction protocol for my sample type (bacterial samples from the eggshell of numerous species of birds). Late for including this samples in my PhD dissertation, I was awarded to perform a postdoctoral stay in the Rob Knight's laboratory in Colorado (USA). This stay exposed me to new challenges as massive sequencing techniques, multivariate data analysis and bioinformatics practically from scratch. This experience pushed forward my research line and it resulted very beneficial. The application of this acquired knowledge allow me to publish data and results after this stage of my research life, and to wide open my network of collaborators.

Afterwards, successive postdoctoral positions in UGR, EBD-CSIC and University of Seville have allowed acquiring new knowledge in other molecular methods (FISH, qPCR), culture-dependent techniques (antibiograms and strain isolation and identification) and data analysis (GIS). In this stage, I have intensified my collaboration in close-related bird-bacteria system: the hoopoe, the preen gland and its bacterial community; strengthen my most productive scientific collaboration. I am advisor of a PhD thesis in this research line with an expected defense in June 2022.

In recent years, I have explored new ramifications of my main line, especially towards more applied research: the use of different probiotics and prebiotics in livestock, poultry and aquaculture, and their effects on the gut microbiota of farm animals and fishes, paying special attention to improving health and production. This is a hot topic given the problem of antibiotic resistance. Its prohibition in animal production has led us to look for effective alternatives to maintain productive levels with guarantees of health in animals. Nowadays, I have the opportunity to apply my knowledge in bacterial culture, bioinformatics, highthroughput sequencing and multivariate analyses to animal production, and hopefully into food conservation and pharmaceutical purposes. This collaboration gave the opportunity to advise several Master thesis in Microbiology and in Biotechnology programs.

Resumen del Currículum Vitae:

My main research line explores the role that bacteria play in hatching success and in the evolution of life history traits of birds. I combined evolutionary biology and microbiology for exploring the association between reproductive strategies and the bacterial load on eggshells at different levels. At the interspecific level, I explored the relationship between bacterial load on eggshells and breeding behaviour of several species of birds and the association of the microbiota on eggshells with hatching success. At the intraspecific level, I studied how experimentally modifications of feathers as nest lining modified bacterial load on eggshells in barn swallows Hirundo rustica in Denmark, as well as negative associations between the abundances of Bacillus licheniformis in the feathers of different pigmentation in the same nest. I also have studied the bacterial community of the gut and on eggshells in the brood parasitism system great spotted cuckoo Clamator glandarius - magpie Pica pica. This expertise allowed me to be associate editor of Animals and reviewed 3 projects in two international project calls (Czech Republic 2012 and Poland 2020) and 49 manuscripts for 26 international journals.

During my PhD thesis, I found an efficient DNA extraction method from bacteria on eggshells. This method resulted also efficient for recovering parental DNA from the eggshells. University of Granada (UGR) granted me with a competitive postdoctoral scholarship in the Knight Lab at the University of Colorado (USA). I learnt new and useful knowledge in Next Generation Sequencing for studying microbial community, as bioinformatics, sequence analyses and tools, and multivariate statistics. In USA, I got financial support for my two studies in the Knight Lab, both funded by the Earth Microbiome Project, an international consortium between companies, universities and more than 360 scientists all over the world. Under this project, I studied bacterial community on eggshells of several species and its relation with hatching success, using NGS. I participated in the publication of first EMP results in Nature as well as being granted with the Award to Excellence Scientific Work: Experimental Sciences. 2019 (Caja Rural Granada and UGR).

In the following years, I intensified my collaboration in the role of uropigial gland bacteria in the reproduction of the hoopoe, learning new molecular techniques (FISH, protein analysis and chromatography) as well as image processing. I also was able to share my knowledge in NGS analyses collaborating in the PhD theses of A. Martínez García, S. Rodríguez Ruano and S. Díaz Lora. Nowadays, I am co-advising Monica Mazorra' s PhD thesis: Nest, odour and parasitism in avian communication.

My research in the Department of Microbiology (UGR) opened a new approach to my research line: how the gut microbiota influences in health and productivity in farm animal. This new and fascinating line has a strong applied component and a potential return of the scientific knowledge to the society. We have carried out experimental supplementation of farm animals with prebiotics, probiotics or different bacteria by-products and we explored their effect on the gut microbiota using my knowledge in NGS. I teach NGS workshops annually and I have advised eleven Master Projects, publishing some of their results in international journals and conferences.

Área Temática:	**Ciencias y tecnologías medioambientales**
Nombre:	BARBA FERRER, JOSEP
Referencia:	RYC2022-038407-I
Correo Electrónico:	jbarbaferrer@gmail.com
Título:	Greenhouse gas fluxes in the soil-plant-atmosphere continuum

Resumen de la Memoria:

I am a forest functional ecologist and I have spent my whole scientific career studying greenhouse gas (GHG) fluxes in the soil-plant-atmosphere continuum. During my MSc (2010) and PhD (at CREAF – Autonomous University of Barcelona, Spain) I focused primarily on the soil component, studying how drought-induced forest die-off affected soil respiration. After one year of working as a postdoctoral research assistant at CREAF, studying plant hydraulic functional traits, I transferred to the University of Delaware (2016-1019; USA) where I worked on comparing net ecosystem CO_2 fluxes and soil respiration. During my stay in Delaware, I also performed multiple field experiments (as a lead researcher or mentoring graduate students) exploring spatial and temporal variability of soil CO_2 and other powerful GHGs (i.e. CH_4 and N_2O) fluxes in temperate forests, tidal salt marshes and suburban mosaic areas. In those experiments we performed, for the first time, continuous field measurements of the three greenhouse gases simultaneously. This allowed us to describe soil functional aggregation of GHG fluxes. There, I also started looking at GHG fluxes coming from tree stems (mostly focusing on CH_4), which has become my main line of research since 2016. For this, I have performed field experiments in order to describe spatio-temporal variability of stem CH_4 fluxes, their drivers, and their origin. I also led a multidisciplinary scoping paper where we identified opportunities and challenges in the field of stem GHG fluxes. From 2019 to 2021, I worked at the University of Birmingham (UK) where I (i) coordinated a tropical experiment on the effect of soil water table changes in stem trace GHG fluxes (Sumatra, Indonesia); (ii) quantified the effect of elevated ambient CO_2 on GHG stem fluxes from mature trees (Birmingham Institute of Forest Research FACE experiment); and (iii) started leading and coordinating MethaneTraits, an international collaboration that seeks to determine the role of wood functional traits controlling tree stem CH_4 fluxes. Since 2021, I hold a highly competitive Talent Attraction Severo Ochoa postdoctoral fellowship at CREAF, where I aim to experimentally study CH_4 fluxes from multiple ecosystem components in Mediterranean forests. I am also coordinating an international collaboration that will estimate the relative contribution of trees on the global CH_4 budget. In the last six years, I have organised four conference sessions at EGU and AGU on stem fluxes, and I am currently editing a special issue on the same topic for the journal the New Phytologist. Together, I believe this has established me as a reference scientist in the field of vegetation GHG fluxes.

Resumen del Currículum Vitae:

I am a forest functional ecologist, with particular interest on greenhouse gas (GHG) fluxes along the soil-plant-atmosphere continuum. I am senior postdoctoral researcher at CREAF (Barcelona), holding a Talent Attraction Severo Ochoa fellowship, and I am associate professor at the University of Girona.

I contributed to push scientific boundaries in two main fields: functional responses of forests to global change and droughts, and the role of vegetation on trace GHG emissions. Some of my studies become reference papers in the field of trace GHG emissions and vegetation. I presented my research in 43 conferences (EGU, AGU, AEET), and I have participated in 19 national and international competitive projects (funded by MINECO, MICINN, The Royal Society [UK], NASA and USDA [USA]), including 3 as PI (The British Ecological Society [UK; 2021], Ecological Continuity trust [UK; 2021] and Consorci de les Gavarres [Sp; 2022]). I organized five sessions focused on GHG fluxes from vegetation in the two most prominent international biogeosciences meetings (AGU [2018, 2020]; EGU [2021, 2022, 2023 (session already approved)]). I also coordinated the Birmingham Institute of Forest Research Journal Club (2019-2021) and I am member of the CREAFTalks Scientific Advisory Board, a programme of Global Ecology seminars (since 2022).

My most scientifically recognised publications resulted from international collaborations, where I coordinated groups of transdisciplinary teams, to address major questions on CO_2 and CH_4 cycles. I am leading and coordinating the MethaneTraits project, which seeks to identify which wood properties control CH_4 fluxes from trees. This project has more than 30 collaborators from 21 different institutions. Within this project, I will host a postdoctoral researcher from the University of Columbia (USA), who will perform wood physiological analyses (Severo Ochoa Mobility Grant; May-December 2023). I am also coordinating an academic and industrial consortium between the University of Birmingham (UK), the IPB University (Indonesia), and APRIL ASIA Inc., which seeks to identify the best water table management strategies to minimize GHG emissions from forestry plantations. Additionally, I stablished two industrial collaborations with Eosense Inc. (Canada; 2020) and Earthbound Scientific (UK; 2022) to design and test greenhouse gas monitoring instrumentation.

Over the years, I supervised one student during their MSc thesis and mentored ten undergraduate and graduate students (Sp: 5; USA: 3; UK: 2). Moreover, I served as PhD Thesis Examiner (Autonomous University of Madrid, 2020) and I am member of a PhD Monitoring Committee (Autonomous University of Barcelona, since 2022). I gave invited lectures at the University of Delaware (2016, 2017, 2018), I taught the course Climate Change in the Earth System at the University of Birmingham (2020). I have participated in dissemination and outreach activities including talks at schools (USA, UK and Sp; 2018, 2019, 2020, 2022), and two radio interviews (2021 and 2022).

I have peer-reviewed 35 scientific papers for 14 different journals and I reviewed research grants for the UKRI NERC (UK; 2020) and Labex ARBRE INRA (Fr; 2022). I am served as guest editor of the special issue "Greenhouse gas emissions from tree stems" (2020-2022) for the New Phytologist journal.

Área Temática:	**Ciencias y tecnologías medioambientales**
Nombre:	PITA GALAN, LUCIA
Referencia:	RYC2022-036761-I
Correo Electrónico:	luciapita@icm.csic.es
Título:	Sponge immuniology: understanding animal-microbe-environment interactions in early-diverging animals

Resumen de la Memoria:

My research focuses on understanding the molecular mechanisms of animal-microbe-environment interactions, with particular attention to animal immunity. Humans and all animals outsource key functions to their microbial symbionts. Evolution established the rules of host-microbe agreements; but, our modern world (e.g., antibiotic abuse, industrialization, climate change) is interfering with animal-microbe communication, ultimately causing disease. I work on sponges, one of the oldest -and still around- animal groups, in order to find the toolkit that allows animals to engage in symbiosis with microbes in a changing environment.

My research line will address three main goals:

1. To disentangle the relative role of host- or microbial-related factors in the response to environmental perturbations. Combining experimental approaches with in situ monitoring of host gene expression, host physiology, and microbial diversity and function in order to discern whether changes in the microbiome or failure of host immunity trigger disease in sponges and other marine organisms.

2. To provide functional evidence of the role of molecular processes on sponge health, linking the molecular, cellular and macroscopic scales. We will characterize the signaling pathways involved in sponge immunity via meta-analysis of existing and newly-generated sequencing data. We will then validate gene functions and hypothesis generated from molecular analysis. For example, fluorescence-activated cell sorting, confocal microscopy, MALDI-imaging MS and spatial transcriptomics will help us tackle the interactions at the scale in which host-microbe dialogues take place.

3. To identify fundamental mechanisms of animal-microbe-environment interactions. Sponges are a key group for understanding the evolution of multicellularity and animal processes. For this reason, I am interested in bringing my research on sponge immunity into the light of evolutionary biology. Generating chromosome-level quality genomes and running comparative analysis to other early-diverging animals like cnidarians and ctenophores will help us decipher the evolution of immune specificity and immune priming. Moreover, my recent work on sponge wound healing and regeneration seems promising to study the function of the innate immune system in inflammation and tumor development.

The proposed research line adopts a true holistic approach into animal health. This work will provide an integrative view of the signaling hubs that sense and interpret extrinsic and intrinsic environmental and microbial signals to promote health in a multiscale resolution, from molecules to cells to populations. This research line contributes to the field of marine ecological immunology, still underdeveloped, but critical to understand the future of marine organisms in the climate crisis. In the long term, I foresee that this research will create a firm bridge between marine and life sciences. I envision my research team as a vibrant, collaborative, international lab spanning the marine science field to biomedical sciences through the study of host-microbe interactions. Our research will generate new knowledge on the evolution of animal-microbe symbiosis and fundamental principles of animal health and transform this knowledge into new targets to prevent and treat modern diseases.

Resumen del Currículum Vitae:

I am an independent researcher at the Institute of Marine Science (ICM-CSIC), thanks to a competitive Junior Group Leader fellowship by Fundación La Caixa. My research aims at understanding the mechanisms of animal-microbe-environment interactions and their influence in animal health, with particular attention to the immune system. I study marine sponges, a paradigm of marine symbiosis due to their ancient origin, their complexity, and their role in the ecosystem. As one of the oldest -and still extant animal groups, sponges allow us to find the animal principles to engage in microbial conversations in a changing environment.

In my PhD thesis (Universidad de Barcelona, 2011-2014), I revealed a strong signature in the bacterial diversity associated with three closely-related sponge species, across temporal and spatial scales (e.g., Erwin et al., 2012, Pita et al. 2013). This signature suggested that the host plays a prominent role in keeping a specific and stable microbiome. For this reason, in my postdoctoral research in Germany, I investigated the host side of symbiosis: the sponge immune system. I described, for the first time, the expression patterns of sponge immune receptors and genes involved in the response of sponges to microbes (Pita et al., 2018). And since then, I have led a new research line on sponge immunity as the guardian of sponge-microbe-environment interactions (e.g., Schmittmann et al.,2021, Wu et al. 2022).

During my career I have covered a total of 8 years of contract through competitive fellowships and in the last 5 years, I have attracted >230,000 € for research costs. Besides the Junior Group Leader fellowship, I am co-PI of the project IMMUBASE (Comparative Immunogenomics in Basal Metazoa), funded by the Deutsche Forschungsgemeinschaft. My current team includes 2 PhD candidates (one at GEOMAR and one at ICM-CSIC), 1 postdoctoral researcher (from IMMUBASE), and one master student from Germany and one BSc from Barcelona who just started in February 2022. In the past, I supervised 2 BSc. students, 2 master thesis, 1 technician, and co-supervised 2 PhD candidates.

I am a well-recognized researcher on marine symbiosis, at international level, as shown by the citations of my work. For example, the review Pita et al. 2018 has become a seminal paper for marine symbiosis. I have also been invited to multiple conferences and I am reviewer for different international journals on symbiosis and microbial ecology topics, including ISME J, Environmental Microbiology, Proceedings of the Royal Society of London, among others. I have also served as external reviewer for funding agencies from different countries (e.g., Spain (Agencia Estatal de Investigación), Germany, Austria, Italy) and as jury for PhD thesis in Spain, the Netherlands and Italy. My career has developed mainly between Spain and Germany but I have also worked in Italy (2 months, 2011) and USA (9 months total, 2022, 2014 and 2013).

I am also engaged in outreach activities. For example, in 2015 I collaborated with my Biology teacher at High school in elaborating a teaching unit about the microbiome for teenagers. In 2016, I became a cartoon character in a comic explaining symbiosis to schoolkids. In 2017, I supervised a master thesis consisting on a pilot citizen science project that we are now further developing.

Área Temática:	Ciencias y tecnologías químicas
Nombre:	HERNANDEZ GIL, JAVIER
Referencia:	RYC2022-037234-I
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Título:	Javier Hernández Gil

Resumen de la Memoria:

In line with my academic background in Chemistry and Biochemistry, my research interests have always pivoted on the interface of knowledge between chemical and biological sciences. At the University of Valencia (Spain), I was awarded a Ph.D. fellowship from the Spanish Ministry of Science to undertake a Ph.D. focused on the design of new chemical nucleases based on copper(II)-1,2,4-triazole compounds. During that time, I also obtained a bachelor' s degree in Biochemistry and two short-term fellowships to carry out two research stays at the University of Edinburgh (United Kingdom). There, I began to explore the possibility of combining nanoparticles (NPs) and specific biological molecules for biotechnological and medical applications. Later, I carried out different postdoctoral stages at world-leading class institutions (CIC biomaGUNE, Imperial College London, Memorial Sloan Kettering Cancer Center, and KU Leuven University), which allowed me to consolidate my research knowledge in nanomedicine. Over these years, my research interests have also expanded to develop novel approaches for improving early cancer diagnosis as well as overcoming limitations in cancer treatments. Currently, I am holding a Maria Zambrano Fellowship under a newly excellence program to attract international talent to Spain. With this " Ramón y Cajal" contract I would like to consolidate my career in Spain to continue developing the research lines that I have started up to now, as well as undertake new ones.

Herein, I propose a multidisciplinary approach to design and develop highly effective positron emission tomography (PET)-based imaging agents for early cancer detection. The team, integrating clinicians, experimental and theoretical chemists, radiochemists, and physicists, will cooperate to efficiently address each step of the development process of radiopharmaceuticals. Initially, clinicians have identified a biological target with clinical relevance (C-X-C chemokine receptor 4, CXCR4). For this project, we will develop a small library of compounds with high affinity to CXCR4 (using machine learning methods); then we will synthesize the proposed structures and radiolabel them with appropriate radionuclides. Finally, the optimal radiotracers will be evaluated using in vitro and in vivo imaging experiments as well as dosimetry studies to select the best candidates. The possibility of advancing them for early-stage clinical development will be also evaluated. I believe that the creation of this multidisciplinary team is essential to early detection research and development, which inherently needs a convergence of biological understanding, clinical insight, radiolabeling expertise, and technological innovation.

The final purpose is to achieve a general strategy that provides PET imaging agents compatible with industrial processes and personalized medicine. I believe that the results arising from this work will place Spanish institutions in an unbeatable position to capitalize on the next generation of diagnostics, not only to boost the competitiveness of our industries but also to create products that will make positive changes in our citizens' lives. Exposure to this high-impact work will also have major consequences in my future career, and if we were successful, the long-term implications in fighting cancer would also be major.

Resumen del Currículum Vitae:

J. Hernández-Gil undertook his PhD studies supervised by Prof. Ferrer in the Department of Inorganic Chemistry at the University of Valencia (FPI predoctoral Fellowship). He showed that he can achieve scientific objectives and produce high-quality results, as highlighted by the publication of nine research papers—six of them as first author—in leading journals in the field, and a PhD defense with the maximum Cum laude mark. He also obtained a bachelor' s degree in Biochemistry and two doctorate grants to carry out short-stays at the University of Edinburgh. Likewise, he participated in different national congresses, receiving three best poster awards, and helped in the teaching tasks of his Department (Inorganic Chemistry and Chemistry laboratories, 28 and 45 h respectively).

Then, he carried out different postdoctoral stages at world-leading class institutions (CIC biomaGUNE, Imperial College London, Memorial Sloan Kettering Cancer Center, and KU Leuven University). He also demonstrated independence and leadership ability as demonstrated by a corresponding authorship in the prestigious Chemical Science journal, the supervision of 15 PhD, master' s and bachelor students, several oral talks in national/international meetings and grants (e.g., RSC Materials Chemistry Division Travel grant, an Erasmus Staff Mobility grant, and an invitation as a plenary speaker). Likewise, he was teacher in charge of Chemistry tutorials (1st year, 8 h) and Chemistry Laboratory sessions (2nd and 3rd years, 15 h) at Imperial College. J. Hernández-Gil was also awarded a Marie Sklodowska-Curie Global Fellowship; and he was included in the 30 early career professionals selected as " Ones to Watch" in 2021 by the SNMMI. In January 2022, he joined the ITQ (UPV-CSIC) as a distinguished María Zambrano researcher. In one year, he is now the PI of two national projects (MFA/2022/014 and PID2021-127408OA-I00) and two European projects consortiums (FRINGE 828922 and LUMIBLAST). On November 14, 2022, the Scientific Advisory Committee of the ITQ visited our institute, and he was selected as one of the speakers. He was also selected as an oral speaker in the open colloquium titled " Photosensitizer-based theranostics for cancer with a focus on glioblastoma" organized by the Lumiblast H2020 FET-OPEN project consortium on January 10, 2023, and will participate as an oral speaker at the VI biennial meetings of the RSEQ Chemical Biology Group.

He has also participated in different dissemination activities: the workshop " Ciència Brillant" (Expociència, https://pcuv.es/es/expociencia-2022/presentacio on May 28, 2022) an interview on the radio program " Investigadores por el mundo y Enfermedades raras" (Radio Libertad FM-https://go.ivoox.com/rf/101879141), and participated in the last two editions (21/22 and 22/23) of the course " the interaction of light and chemistry in the 21st century" at the Senior University (UPV). He has been PI of 5 projects, including two national projects (MFA/2022/014 and PID2021-127408OA-I00) and three international projects. In addition, Dr. Hernández-Gil has given 1 invited lecture and 7 oral communications. He is currently supervising 3 PhD students and has also tutored several undergraduate or Master students and short-stays of PhD students. In addition, he is the author of 25 publications and 1 patent (2020).

Área Temática:	**Ciencias y tecnologías químicas**
Nombre:	DELGADO PINAR, ESTEFANIA
Referencia:	RYC2022-035170-I
Correo Electrónico:	estefania.delgado@uv.es
Título:	Luminescent nanomaterials for small molecules recognition. Theranostic applications

Resumen de la Memoria:

During my career, I have carried out my research with the objective of exploiting the combination of different techniques for a variety of applications in different topics: inorganic materials, catalysis and most important, the recognition process of interesting species by using mainly the advantages of Supramolecular Chemistry.

I joined the Supramolecular Chemistry and, the Ceramic and Vitreous Materials laboratories after completing my degree in Chemistry, and I was awarded with a V Segles and later a FPU grant to carry out my PhD at the Molecular Science Institute of the University of Valencia, under the supervision of Profs. E. García-España and J. Alarcón. I defended my thesis in January 2016, entitled "Design, synthesis and characterisation of hybrid systems. Medical and environmental applications", for which received cum laude honours and the European Mention. The core of my thesis was based, on one hand, on the synthesis of homogeneous nanoparticles in size and shape where the number of hydroxyl groups on the surface was maximised. On the other hand, the design and synthesis of polyamine ligands where factors such as the topology or the nature of the donor atoms were evaluated, in order to optimize the recognition of the target species in aqueous solution.

During 2016-2017, I worked as a junior PhD researcher to develop polyamine systems able to mimic enzymes with medical applications or catalysts.

Later, in September 2017, I moved to Coimbra to work on a project as a postdoctoral researcher – MATIS in which, through different approaches, I was able to increase the luminescence of certain fluorophores or even modulate their photophysical properties. Two approaches were used: immobilization of fluorophores in the interlayers of layered double hydroxides or by encapsulation of the fluorophores inside cucurbiturils. Next, I joined the Laserlab project, being a postdoctoral researcher at the Coimbra LaserLab, which is part of consortium of leading organisations in laser-based research from 16 countries sponsored by the 7th Framework Programme of the European Union. Being in the Coimbra Laser Lab allow me to carry out photochemical, photophysical and spectroscopic studies in different host-guest systems, from the infrared through the ultraviolet, covering timescales from femtoseconds at room temperatures to ultra-slow processes at cryogenic temperatures.

In September 2020, the Portuguese national funding agency for science, research and technology awarded me a project as principal investigator in an excellence program (CEEC, 6 years) giving me the possibility of opening a new research line in the photochemistry group at the University of Coimbra that could sum up value to the research group. The skills acquired in nanomaterials, polyamines as recognition units and photophysics allow me to start to understand the driving forces to be taken into account by which we can stabilize certain oligonucleotide sequences, in particular, G-quadruplex by means of non-covalent forces.

Finally, at the beginning of 2022 I have returned to Spain with a M. Zambrano contract of excellence, where I will continue to develop the line of research started in Coimbra. Moreover, I have recently won another project as PI in the LaserLab Europe framework.

Resumen del Currículum Vitae:

Estefanía Delgado-Pinar defended her PhD thesis and started a postdoctoral contract at the Institute of Molecular Science in Valencia, where she taught in the Inorganic Chemistry degree. She was also collaborating with the CEU Cardenal Herrera University to teach several subjects in English within the Pharmacy degree. It should be noted that at this time she has shared the co-direction of some master thesis in the molecular nanoscience and nanotechnology program.

Her main lines of research focused on the synthesis of nanoparticles of different chemical nature, varying properties such as shape and size and studying their spectroscopic properties, their external functionalisation with organic molecules, etc. She also developed a great deal of experience in the synthesis of molecules capable of detecting charged species. The applicant shows a high level of interdisciplinarity as can be seen in the published papers.

The researcher has improved her knowledge in several techniques acquired during the thesis project. The skills acquired in photochemistry and photophysics of aromatic compounds conjugated with polyamines, electron microscopy and nuclear magnetic resonance stand out, being even an authorised user in the last two. In addition, the completion of the thesis in the Supramolecular Chemistry group of the University de Valencia has allowed him to participate in different regional and national projects, being one of his tasks the management of workshops or the promotion of scientific dissemination activities.

On September 2017, the applicant won a postdoctoral contract at the University of Coimbra (Portugal) to study the interactions between coumarins and cucurbiturils using spectroscopic techniques among others and has initiated the synthesis of a new family of compounds based on bithiophenes. It has improved its skills in the photophysical characterisation of supramolecular entities using fast kinetic techniques (fs-ps). After that, she won a project as IP within the CEEC program (6 years), funded by the "Fundação para a Ciência e a Tecnologia" in Portugal. The main objective of her project was to understand the stabilisation of oligonucleotide telomeric sequences using fast photophysical techniques. Her knowledge in studying supramolecular host-guest interactions allow her to collaborate with other research groups like Macromolecules Group, MultiComponent Systems and Organic Chemistry. Moreover, she participated in other projects from the CQC center. The different postdoctoral contracts gave her experience in the setup of research facilities from their very basics. Moreover, she started her own international collaborations with the U. Lisbon and U. Burgos.

She has combined her research work with teaching duties, while maintaining a good research results that are published in the most recognized journals of her area. Also, she is always participating in dissemination activities to non-scientific public. She participates in scientific dissemination activities between kids and youngsters, for the promotion of science and chemistry among the general public. She is also aware that, when possible, scientific results need to be transferred to industry. She has already demonstrated her ability to transfer of scientific and technological knowledge by the registration of a patent. Recently, I obtained the i3 certificate of excellence in research.

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática:	**Ciencias y tecnologías químicas**
Nombre:	DÍEZ GARCÍA, PAULA
Referencia:	RYC2022-035568-I
Correo Electrónico:	diezgarciapaula@gmail.com
Título:	Multi-omics approaches towards personalized treatments in cancer

Resumen de la Memoria:

During my 10 years of research experience, I have acquired technical skills in the chemistry field, mainly related to protein-based investigations using mass spectrometry, mass cytometry and flow cytometry platforms. Moreover, I worked on the design and evaluation of nanostructures for drug delivery. All this technology was applied for the study of the immune system and diverse cancer types, for the understanding of their crosstalk and the definition of treatments and diagnosis/prognosis tools.

In this sense, my main contributions to science have been:
1) the characterization of the B cells from chronic lymphocytic leukaemia (proteome and phosphoproteome);
2) the description of the Ag-dependent B-cell maturation pathway at the protein level;
3) an approach for peptide sequencing of Fab fragments from B-cell receptors;
4) the design and development of multiple protein and antibody microarrays (planar and bead-based formats);
5) the profiling of the so-called missing proteins located in the human chromosome 16 (as part of my work within the Human Proteome Project);
6) the design and evaluation of multiple nanostructures and anti-cancer treatments;
7) a multiplex nanoparticle biocompatibility assay;
8) the development of flow cytometry and mass cytometry marker panels for the screening of myeloid populations in blood and other tissues;
9) the understanding of the human myeloid maturation pathway from bone marrow to peripheral blood to tissues;
10) the proteomics characterization of up to 44 different cell types (including tumoral and normal material, in vitro stimulated cells, and cells from the adaptive and innate immune systems, among others) using low samples amounts;
11) an MS-based approach for proteome profiling of paucicellular samples in a clinical setting;
12) a new tool for the isolation of intact phagolysosomes from small inputs; and
13) an in silico post-digestion prediction tool for lysosomal cutting.

All this work has been developed during my predoctoral formation (at USAL, 2012-2017) and later on during my postdoctoral stays: at LUMC (2018-2022), including two short stays at ImmunoStep S.L. (first half of 2022) and USAL (second half of 2022) for the completion of the TiMaScan ERC Advanced grant project. Recently, I moved to ISPA (Asturias, January 2023) after obtaining a "Sara Borrell" grant to develop my own project on the discovery of personalized treatments for sarcomas.

After all these years of research and continuous scientific education, I would like to apply my extensive knowledge in proteomics, drug nanocarriers, mass cytometry, flow cytometry and immunology for the development of diagnosis and prognosis tools and personalized treatments in cancer. I genuinely believe that my multidisciplinary profile, obtained throughout my international experience, and my high motivation will help me in my ambition to become a principal investigator and have my own research team to perform high-quality investigations. Finally, the fact that my expertise combines a more basic chemistry background with its application to the immunology/oncology fields would be of great value for the development of successful translational research.

Resumen del Currículum Vitae:

I am a postdoctoral researcher with >10 years of international experience in state-of-the-art proteomic technologies and their application to investigate biological questions in the oncology field, from an immunological perspective.
I performed my doctoral thesis at the USAL (Spain, 2012-2017) under the supervision of Prof. A Orfao and Dr. M Fuentes, focusing my investigations on the B cells of chronic lymphocytic leukemia deciphering protein expression profiles, signalling pathway alterations and phosphorylation patterns related to different disease stages. In 2017, I obtained a PhD with Summa Cum Laude distinction and with a relevant scientific production: 33 peer-reviewed publications (12 as 1st author, 9 as 2nd author). In 2018, I started my postdoctoral period at LUMC (The Netherlands, 2018-2022) after being recruited by Prof. van Dongen to lead a team of 6 people. There, I applied my in-depth proteomics expertise to study the monocyte/macrophage system aiming to develop a novel tool for early cancer diagnosis. In line with this project, I performed stays at ImmunoStep and USAL (2022, Spain). Afterwards, I moved back to Spain after obtaining a "Sara Borrell" grant (ISPA, Spain, 2023-today) to develop my own research line on personalized medicine in osteosarcoma, within the team of Dr. Rodríguez.

Next, the main achievements are described:
- Knowledge generation. Proteomic B-cell maturation trajectory; systematic approach for B-cell receptor peptide sequencing; profiling of leukaemia-related protein expression alterations by microarrays and MS; design/analysis of anti-cancer nanostructured treatments; monocyte-macrophage maturation pathway; protocol for paucicellular clinical samples.
- Result communication. Publications: 45 (16 as 1st author, 14 as 2nd author, 2 as senior author) including 22 research articles, 11 reviews, 2 divulgation articles and 10 book chapters. H-index: 11 (Scopus), 14 (Google Scholar). Congresses: 3 invited talks, 3 oral communications, 5 senior and 11 1st-author posters (from a total of 41).
- Funding: Introd. to lab research grant (€2k, AECC 2011). Predoctoral researcher grant (€76k, European Social Fund 2013). Seal of Excellence H2020-MSCA-IF, 91.4 (out of 100) (MSCA 2018). TMT Bronze award ($5k, Thermo 2019). Ramón y Cajal call (9th position on waiting list, 2022). Sara Borrell grant (€95k, ISCIII 2022). Travelling grants. Total: €180k.
- Leadership: Daily leading of a team of 4 technicians and 2 PhD students.

- Technical development: Patent: One-step phagocytosis-cell activation-cell death assay (Granted, 10788481). M Fuentes, P Díez, CI Teodosio, A Orfao, R Jara.
- Collaboration with industry: ImmunoStep S.L. (Salamanca) for the production of antibodies targeting specific post-digestion peptides (2022-today).
- Training/mentoring: Co-promotor of 2 ongoing PhD students, supervisor of 4 research technicians, co-supervisor of 5 MSc students and 8 BSc students.
- Editorial activities: Guest editor, topic editor, and reviewer
- Teaching. Immunology practical course (BSc Pharmacy and Biotechnology, USAL. 2014/2015, 2015/2016); Biomedical Academic Scientific Training for exchange students (BSc Biosciences, Univ Leiden. 2019-2021); IV, V, IV ProteoRed Protein Microarray International Courses (Univ Complutense Madrid. 2014-2016).
- Evaluation of researchers: Doctoral thesis tribunal member (Univ Oviedo, 2019).

Área Temática:	Ciencias y tecnologías químicas
Nombre:	GARCIA BALDOVI, HERMENEGILDO
Referencia:	RYC2022-037287-I
Correo Electrónico:	hermegb@hotmail.com
Título:	Advanced photoelectrocatalytic processes for the obtention of solar fuels and high value chemicals.

Resumen de la Memoria:

- PhD assessment: Cum Laude, 2016.
- Prizes: Best Doctoral Thesis prize 2016 of the Universitat Politècnica de València.
- Research stays in International Research Centers:
- Harvard University, Brigham and Woman's Hospital 2015, 4 months.
- University of Cambridge, Chemical Engineering and Biotechnology department, 2017-2020, 2 years and 6 month.
- International scientific publications: 35 (+2 pre-print)
- H-Index: 10
- In first quartile of the group 85%
- First author: 12
- Corresponding author: 6 (+1 preprint)
- Publications during international stays: 4
- Citations: 373
- Communications in International conferences: 13 (7 oral presentations)
- Supervised degree's and master's thesis: 12
- Supervised PhD's thesis: 2 (+ 4 ongoing)
- Founded R & I projects as co-IP: 5

Personal suitability to develop the line of research.:
- Number of articles associated to proposed research vs total publications: 26/37
- Co-IP Funded R&D projects related to line of research versus to total co-IP funded projects: 3/5
- On-going European projects, which I participate as postdoctoral researcher related to line of research: 2

Trajectory evolution.
- PhD (2012-2016) - Articles (total articles:16, first author: 10, corresponding author 0) funded projects as co-IP 0
- Postdoc (2016-2020) -Articles (total articles: 24, first author 11, corresponding author 1) funded project as co-IP 3
- Postdoc (2020-2023) -Articles (total articles 37, first author 12, corresponding author 7) funded projects as co-IP 5

Resumen del Currículum Vitae:

Early, during my degree in Chemistry, I applied to scholarships and extracurricular projects, such as Predoc-CSIC in 2009 or later, in 2010 I got a scholarship to carry out the Final Degree Project, from the Ministry of Education and finally, in the summer of 2011, I carried out a Collaboration fellowship from the Catalan Institute of Chemical Research.

My PhD in Sustainable Chemistry was founded with Formación de Personal Investigador grant of the Universitat Politènica de València (FPI-UPV Grant) to carry out my PhD in Instituto Mixto de Tecnología Química (ITQ). My PhD was based on the development and application of graphene-like and carbon nanoparticles in different multidisciplinary fields. Also, I studied in heterogenous photochemistry of metal oxides, plasmonic nanoparticles, metal organic frameworks, metal complexes. Gaining experience in synthesis and characterization of materials. In my thesis I made different collaborations with national and international groups such as led by Victor M. Victor, Norbert Stock or Zhaohui Li. My PhD ended with a Cum Laude assessment and awarded with the Extraordinary Thesis award.

Ending my thesis, I did a predoc research stay in Omid's Farokhard laboratory at the Woman's and Brigham Hospital of Medical Harvard School in Boston. During this period I was investigating viability of carbon nanoparticles for drug delivery. Where I was mentored by Dr. Nazila Kamaly applying my Carbon-based nanoparticles.

In University of Cambridge I was responsible of managing John's S. Dennis lab and I was carrying out the experimental development of the project "JCECAMM/Project1/2016 " and directed by John S. Dennis, Laura Torrente-Soriano, Adam Boies and Stuart Scott and founded by KACST, an Saudi Arabian institution. Within this period, I applied to two internal projects, mentored 5 master thesis and participate in the production of 5 articles, however, one of them still under revision.

My leadership could be evaluated through the projects I participate, as co-IP in 5 projects, among them: APOSTD founded by Generalitat Valenciana and European Union to develop my first research project related with solar fuels; and IDEQURE in which I collaborated with Prof. Josep Mercader, associated with the development of systems to detect and disinfect air granted by IDISBA Furthermore, thanks to participate in two on-going international European projects (Methasol and MOF2H2) as Postdoctoral researcher, incrementing my professional network with top international researchers in the field of photocatalysis as Prof. Alexandra Fateeva, Prof. Christian Serre, Prof. James Durran, Prof. Vasile I. Pârvulescu, Prof. Amarajothi Dhakshinamoorthy and Prof. Zhaohui Li.

As indicator of the excellence of my research, dissemination activities could be a realistic indicator: thus, I got 12 communications international congresses being 5 oral talks and 2 invited speaker presentation. Also, I have 37 international scientific publications, 12 being the first author and other 7 of them as corresponding author, with more than 373 citations. Additionally, I have mentored 12 master and undergraduate theses and 2 PhD's, also I am co-supervising 4 PhDs students. Published works accredits me as an expert in fields such as photochemistry, material science and environmental science. All these achievements support my leadership as a researcher.

Área Temática:	**Ciencias y tecnologías químicas**
Nombre:	GARCIA DIEZ, ENRIQUE
Referencia:	RYC2022-036699-I
Correo Electrónico:	e.garcia@hw.ac.uk
Título:	Investigador Enrique Garcia

Resumen de la Memoria:

Since the beginning of my scientific career, I have been focused on developing secure, reliable, and sustainable energy processes for our society with high-competitive economic and energy requirements. In 2010 I was focused on developing a new waste-free process for mercury removal from fuel gas. After my work with mercury dynamic capture, I moved to study the CO_2 capture process and contribute to the progress of novel CO_2 capture technologies. From 2012 to 2017, I was involved in the development of the Chemical Looping process with liquid fuels. After finishing my work in Chemical looping, I start working in CO_2 adsorption processes. In total I have been involved in 7 research projects, coordinating two of them and being the principal investigator of one. Furthermore, I have been directly involved in scientific dissemination.

During my research career, I have collaborated at different levels with national and international scientific groups. Initially, I worked with INCAR-CSIC, CNRS, and Silcarbon as an external funder company. At the same time, I started a collaboration with Ecole Polytechnique de Lausanne (EPFL) in Sion in CO_2 capture using metal-organic. Based on this work, I was offered partial work at the RCCS group and half at EPFL as an external adviser. The following collaboration between EPFL and HWU was enforced in a Horizon2020 project where Berkley, SINTEF, Zurich university, TOTAL, and Equinor were involved. In the last couple of years, I have been involved in research with Swansea university stablishing the basis of a research project from which I guaranteed funding and I have been the principal investigator. Finally, during my period at Heriot-Watt, I fully co-supervised more than 15 students including two Ph.D. students in CO_2 capture.

I consider myself an ambitious researcher and highly motivated to continue learning, sharing, and contributing to help achieving a much faster transition to a low carbon economy and the timely deployment of CCS technologies required to reach net zero targets. The aim of my future research work will be focused on paving the way for high-impact studies, transforming the production of the next generation adsorbents for CO_2 capture, separation, and utilization. Their integration in current energy and industrial processes, redesigning the CO_2 capture and separation process. The first way to follow will be the application of novel adsorbents (MOFS) and their scale-up synthesis route. In this sense, I am interested in implementing the initial work I have been doing at Heriot Watt university and in collaboration with EPFL and Swansea university. On the other hand, the second way to follow is the implementation of novel CO_2 capture processes and the production of alternative energy vector development, mainly green hydrogen for industrial application. I have the intention to develop the implementation of Machine learning (ML) and AI in CO_2 capture process evaluation.

Due to the nature of the project, the first task that constitutes my future is scheduled to take place over a total of three 2-3 years. Moreover, the second task that constitutes my future work is scheduled to take place in a total of three 3 years. If the project is successful, the main outcome will be the Integration of novel adsorbents in TRL 5 CO_2 capture processes and full evaluation of CO_2 capture processes.

Resumen del Currículum Vitae:

During my scientific career, I have been directed to develop secure, reliable, and sustainable energy processes for our society. Mainly I have been focused on CO_2 removal processes. Initially, I was involved in the development of the Chemical Looping Process to use for the first-time liquid fuels to obtain CO_2 negative emissions. Currently, I am working to develop new materials and their evaluation for CO_2 capture from the atmosphere and energy processes. To reach this objective, since 2011 I have been involved in 7 research projects, in which I have collaborated with both national and international scientific groups, and with international companies. From all of them, I have been coordinating two. In the project financed in the scope of Horizon2020, I coordinate the experimental work carried out by 5 people. My tasks as coordinator are planning the work of each researcher and being able to lead the experimental studies after the negative effect of the COVID pandemic. In the second one, I am also the principal investigator, coordinating the work between HWU and Swansea university where I study the optimization of large-scale MOFs production through a green synthesis route and their application on CO_2 capture.

As a result of my scientific work, I have published almost 20 scientific articles in peer review journals, of which more than 90 % are indexed journals, and all of them Q1. Special relevance is my publications in Nature and Energy & Environmental Science. Furthermore, I have 3 contributions to books and almost 30 contributions to national and international conferences. In my publication in Nature, I share the first authorship with two researchers from Canada and Switzerland, which was carried out in collaboration with leading groups from Canada, the United States, Spain, and Switzerland. This work brings together the theoretical evaluation of metal-organic frameworks (MOFs), and their experimental behaviour. This article marks the CO_2 capture modelling and evaluation basis of MOF. Secondly, I have published in Energy & Environmental Science a detailed model that correctly describes the capture of water at any relative humidity by amine adsorbents. In addition to these publications, I have published studies focused on CO_2 capture from activated carbons where it is determined what textural properties are required to improve CO_2 adsorption. I previously published studies focused on Hydrogen production with intrinsic CO_2 capture from liquid fuels. In these works, it is shown that it is possible to obtain maximum hydrogen production without energy penalties.

Furthermore, during my career, my responsibilities include the leaders of construction, commissioning, and operation of different pilot plants and dynamic rigs. Moreover, I have been working as a postdoctoral researcher and external advisor at EPFL for one year. In addition to leading the experimental work on CO_2 capture in the RCCS group, I am one of the coordinators of the scientific dissemination and engagement group. I have been preparing seminars establishing contacts between researchers and lab suppliers. I have co-supervised a total of 17 students including 2 doctoral thesis. I have been involved in the evaluation of Ph.D. thesis at the University of Zaragoza. I have been invited as a speaker at the Experimental and Computational Chemistry Symposium in Edinburgh.

Área Temática:	Cultura: filología, literatura y arte
Nombre:	PASCUAL HERNANDEZ, RAFAEL JUAN
Referencia:	RYC2022-035374-I
Correo Electrónico:	rafael.pascual@ell.ox.ac.uk
Título:	Continental Sources of Anglo-Saxon Poetry

Resumen de la Memoria:

My doctoral dissertation (Universidad de Granada, 2014), which was on the internationally controversial issue of the dating of Beowulf (and which received the 2013–2014 Extraordinary Doctorate Award as well as the 'Mención de Doctorado Internacional'), was funded by the 'FPU' programme of the Spanish Ministry of Education (2010–2014). In 2012, I obtained a very competitive grant from the Ministry (€6,600), which allowed me to perform a four-month research stay at the University of Cambridge. Upon completion of my PhD, I was admitted as Postdoctoral Research Fellow at the Department of English of Harvard University, where my doctoral work was known and esteemed. During my stay at Harvard, which was mostly funded through the 'Perfeccionamiento de Doctores' programme of the Universidad de Granada, I acted as Teaching Assistant to Prof. D. Donoghue and as mentor to several postgraduate students. After I had been appointed 'Juan de la Cierva-formación' fellow at the Universitat d' Alacant in 2017, a four-year postdoctoral position opened for a specialist in Old English at Oxford. I decided to apply and got the job. As Postdoctoral Research Assistant at Oxford, I was chiefly responsible for the Old English components of the CLASP project, though I also did substantial work on its Latin side. In 2019, I got a three-year Junior Research Fellowship to further support my work, endowed with a research allowance of £1610 per annum (£4,830 in total).

The title of my line of research is 'Continental Sources of Anglo-Saxon Poetry'. Departmentalization has not been good for medieval English studies. Old English poetry is all too often studied in isolation, without due regard either for the Anglo-Latin poetry that was composed alongside it or for the Latin sources of Continental origin with which vernacular poets were deeply familiar. As Tolkien memorably put it, 'national boundaries are unsatisfactory definitions of a study'. Very few students of Old English these days (at Oxford or elsewhere) know that the most quoted author by Anglo-Latin poets, with the single exception of Virgil, was the Hispano-Roman Juvencus. And very few are aware that most of the classic poems that they study, such as The Dream of the Rood, Exodus, or even Beowulf, exist only because their authors decided to follow in the footsteps of Hispanic and Continental Latin poets like Prudentius, Caelius Sedulius, and Arator. Unfortunately, these Latin poets, because they composed outside the classical period, are not normally given the attention they deserve. The aim of my project will be to assess Old English poetry within the larger context of Latin literature, both insular and continental, in order to arrive at a more comprehensive understanding of Anglo-Saxon poetic culture. Given my previous work at CLASP, my expertise in Old English philology, and my training in Latin, I think I am in an ideal position to make this scholarly enterprise succeed. I will, moreover, join efforts with Prof. Mercedes Salvador Bello, the leading Anglo-Saxonist in Spain, in order to establish there a permanent line of research that is highly competitive at an international level, and which can have continuity, after the 'Ramón y Cajal' programme, in the form of an ERC project.

Resumen del Currículum Vitae:

I research and teach medieval English literature, with a focus on Old English poetry. I am currently Stipendiary Lecturer in English at New College and Lecturer in Old and Middle English at Magdalen College, Oxford. Previously, I was Departmental Lecturer in English Language and Literature at Pembroke College and the Faculty of English, and Postdoctoral Research Assistant at CLASP: A Consolidated Library of Anglo-Saxon Poetry, the Oxford-based leading research project in my field and one of the most generously funded by the ERC in the Humanities (€2,443,640). I am the co-editor of three scholarly volumes and the author of more than twenty book-chapters and peer-reviewed articles, which have appeared in some of the most prominent journals of my discipline; and I have presented papers at more than thirty international conferences and seminars.

In my publications, I have addressed a variety of issues pertaining to medieval English language and literature, including the continuity between Old and Middle English alliterative poetry, poetic syntax and style, and the representation of monsters in Beowulf and contemporary Anglo-Latin literature (among others). My research on Old English philology has been cited by numerous scholars in the field, and several plenary speakers at the Medieval English Research Seminar of the University of Oxford (one of the world's leading fora on the subject) have engaged with my published work. In 2017, I received the 'Excelentes en el Conocimiento' Research Award of Caja Rural for my contributions to scholarship (€2,000). Currently, I am working on a critical edition of Judgement Day II (the only major Old English poem that is still in need of editorial attention). I expect my edition to have a considerable impact on the discipline.

I am seriously committed to my profession. I am a member of the Scientific Committee of Neophilological Studies and have served as book-reviews editor for medieval literature at the journal English Studies (Q1, SJR). I have also acted as peer-reviewer for fourteen scholarly journals and for several prestigious presses (including Cambridge University Press); and as Grant Evaluator for the National Science Centre, Poland. I have been mentor of several academic visitors from Spain here at Oxford, and have been invited on multiple occasions to give plenary lectures to a variety of audiences, both academic and non-academic (including the keynote address to the II Research Seminar of ASYRAS: Association of Young Researches on Anglophone Studies, whose aim was to train and inspire young researches in English Studies working at Spanish universities). I have participated several times in podcasts and have been interviewed for newspapers on a number of occasions. I have co-organized several international conferences and seminars. Between 2018 and 2022, I was Secretary-Treasurer of SELIM: Spanish Society for Medieval English Language and Literature. During my tenure, I played a key role in introducing several initiatives, such as the Patricia Shaw Annual Memorial Lecture and the Bruce Mitchell Award for Early-Career Scholars (which has helped several postdoctoral scholars to advance their careers). I have assessed the work of three doctoral students here at Oxford and am currently supervising two undergraduate dissertations ('TFGs') on Old English poetry.

Área Temática:	**Derecho**
Nombre:	ARLETTAZ , FERNANDO EMMANUEL
Referencia:	RYC2022-037133-I
Correo Electrónico:	fernando.arlettaz@yahoo.es
Título:	Derechos Humanos, religión y ciudadanía

Resumen de la Memoria:

Mis aportaciones científicas se han centrado en dos líneas: A. Democracia, derecho y religión y B. Ciudadanía: migraciones, asilo y minorías. En relación con la primera, he abordado cuestiones teóricas sobre el papel de la religión en las sociedades democráticas y la protección internacional de la libertad religiosa. En relación con la segunda, he considerado el régimen legal de las migraciones, así como la protección internacional de los refugiados y las minorías. Mis trabajos han sido publicados en revistas de gran relevancia, tanto españolas (Derechos y Libertades, Revista de Estudios Políticos, Anuario de Filosofía del Derecho, etc.) como extranjeras (Religion and Human Rights; Anuario Colombiano de Derecho Internacional; Journal of Law, Religion, and State; Annuaire Canadien de Droit International; Boletín Mexicano de Derecho Comparado; etc.).

Soy autor de 7 libros de autoría única, 28 capítulos de libro y 53 artículos en revistas especializadas. De esta producción: * 1 libro y 8 capítulos de libro han sido publicados en editoriales españolas de nivel Q1 (Aranzadi, Tirant lo Blanch y Dykinson); * 1 capítulo de libro y 22 artículos están incluidos en la Web of Science (de los cuales 14 en revistas del JCR) y 18 artículos en Scopus.

De acuerdo con Google Scholar, el número total de citas recibidas es de 373 (índice h = 11). Mis contribuciones han sido citadas por altas cortes nacionales (como la Corte Suprema de México) e internacionales (como la Corte Interamericana de Derechos Humanos) y utilizadas como material en cursos de posgrado. He participado en alrededor de 100 eventos científicos, tanto en España como en el extranjero.

Muchas de mis publicaciones asumen una perspectiva interdisciplinar, lo que se evidencia en la orientación de las revistas respectivas (por ej., Revista de la Sociedad Argentina de Análisis Político; Sociedad y Religión; Revue Internationale de Criminologie; Revista Mexicana de Ciencias Políticas y Sociales; etc.).

He sido investigador principales de 3 proyectos de investigación y he participado en otros 8 proyectos. Asimismo, he editado o coeditado 4 libros y un número monográfico de revista. Finalmente, he coordinado la realización de eventos científicos en entidades de diversos países, contando con la participación de destacados expositores.

Resumen del Currículum Vitae:

En 2007 obtuve mi Licenciatura en Derecho en Argentina (media 9,48/10 y premio final de carrera) y en 2012 mi Doctorado en Sociología Jurídica e Instituciones Políticas en la Universidad de Zaragoza con la calificación cum laude, premio extraordinario y mención europea.

Mi perfil está marcado por la internacionalización, tanto en la etapa de formación como en la de labor investigadora. He ocupado sucesivamente puestos de investigación en la Universidad de Zaragoza, la Université d'Aix-Marseille (Francia, en el marco del programa europeo Marie Curie) y el Consejo Nacional de Investigaciones Científicas de Argentina. Actualmente soy profesor en el Centro Universitario de la Defensa de Zaragoza.

Diversas estancias de investigación (Institut d' Études Politiques de Toulouse, Universidad Nacional Autónoma de México, Universidad Externado de Colombia, Freie Universität Berlin, Universitat Pompeu Fabra) me han puesto en contacto con equipos de investigación con los que continúo colaborando hasta el presente. En el periodo 2020-2021 participé del programa de investigación de la Academia de Derecho Internacional de La Haya.

Mis aportaciones a la sociedad se vinculan, en primer lugar, a mi actividad docente. He dictado clases de grado y posgrado (Derecho Internacional Público, Relaciones Internacionales, Filosofía Jurídica y Derechos Humanos) en Argentina, España y Colombia y soy autor de materiales docentes. En segundo lugar, he desarrollado actividades de divulgación mediante cursos y conferencias abiertas al público en general en varios países.

La participación en iniciativas de transferencia ha tenido lugar mediante mi intervención en la implementación de convenios entre las instituciones científicas a las que he estado vinculado y diversas administraciones públicas, tanto en España como en el extranjero. También he redactado informes para órganos de las Naciones Unidas y amicus curiae para la Corte Interamericana de Derechos Humanos.

He contribuido a la formación de otros investigadores mediante la dirección de 2 tesis doctorales (en curso, una de ellas con fecha prevista de defensa en 2023) y 7 trabajos finales de máster (defendidos o en curso). He formado parte de 2 tribunales doctorales y de una decena de tribunales de máster. Desde 2020 soy coeditor de la Revista Derecho, Estado y Religión (Argentina). Participo en los comités editoriales de revistas americanas, europeas y asiáticas y realizo habitualmente tareas de evaluación de artículos. También he evaluado proyectos y candidaturas en convocatorias de entidades científicas.

AYUDAS RAMÓN Y CAJAL – CONVOCATORIA 2022
Turno General

Área Temática: Derecho
Nombre: GARCÍA ANDRADE, PAULA
Referencia: RYC2022-037248-I
Correo Electrónico: pgandrade@comillas.edu
Título: EU external relations law: migration and asylum in EU external action; the phenomenon of international soft law

Resumen de la Memoria:

The primary area of my expertise is the external dimension of EU migration and asylum law. My scientific contributions attest to the exhaustive treatment of the legal contours of EU external action on migration from an EU external relations law perspective and provide salient scientific progress in issues such as the vertical distribution of EU external competences, the horizontal delimitation of migration with other EU policies such as the CFSP and development cooperation, the scope and nature of cooperation instruments, the inter and intra-institutional coordination needs, or the recourse to mixity. I have established myself as a leading voice in this area, in which I publish contributions in prominent international journals on EU law (CMLRev), top-rank journals on migration law (EJML), and outstanding publishers (Elgar, Routledge, Reuters/Aranzadi, Tirant lo Blanch).

My intense involvement in research activities of the Odysseus Network on legal studies on migration and asylum, specially providing my expertise on the EU external action on these policies, evidences the quality and internationalization of my research and the recognition of my leadership in this field. This is also illustrated in my responsibilities in a contract with the European Parliament for the provision of expertise on EU cooperation with third countries on migration, as well as my participation in competitive international and national research projects on migration and asylum law, in which I have been in charge of leading research objectives with solid and enriching contributions in the external dimension of these policies.

Building on this expertise, I would investigate into a new line of research related to the inter-systemic relationships between international law and EU law on migration and asylum. I would explore how the EU is acting as 'norm exporter' on migration and asylum governance, and how the scattered but expanding international rules are influencing the framing of EU norms, thus contributing to advance on the mutual interactions between these legal orders.

A second focus of my expertise relates to the legal challenges raised by the recourse to international soft law in EU external action, from the optic of the principles of conferral, preemption and institutional balance, including thus its implications on the demarcation of decision-making powers and democratic control. High-impact publications (Hart, Routledge), lectures in international conferences organized by eminent specialists and my participation in research projects attest to my integration also within the legal scholarship in EU external relations law and the recognition of my research within this area. This is also shown in my recent contribution to a collective volume which gathers the most prominent scholars in this field in order to thoroughly analyze the whole ECJ case law on EU external relations (Hart, 2022).

In this area I would like to delve into the justiciability of non-legally binding agreements, as well as their normative value and effects on individuals. My research will also expand materially to policy fields of EU action other than migration, with the aim of contributing, with a comprehensive monograph, to the legal understanding of the position of international soft law in EU external action and the limits imposed by structural principles of EU external relations law.

Resumen del Currículum Vitae:

I am Associate Professor of Public international law and EU law at the Faculty of Law of the Universidad Pontificia Comillas (ICADE). My main areas of expertise are EU external relations law, mainly questions of competence, institutional balance and rule of law, and the external dimension of EU immigration and asylum law, in which I have established myself as a leading voice, with the publication of a monograph on the vertical distribution of EU external competences on migration (Tirant, 2015) and over 40 contributions in high-impact prestigious journals and collective volumes edited by top-rank publishers. Through my research, I have contributed to the progress of scientific knowledge on the legal contours and limitations to the design and development of the EU external action on migration, as well as to EU external relations law more broadly, by advancing legal research on the system of EU external competences, and on the EU recourse to international soft law instruments.

I have been invited to participate in national and international conferences on EU external relations law and EU external action on migration and asylum, and I take part in research projects funded by national entities such as the Spanish Ministry of Economy and Competitiveness, and EU institutions, as the Jean Monnet Programme or the European Research Council of the European Commission. I have participated in a services contract with the European Parliament for the drafting of a high-impact study on EU cooperation with third countries on migration, which I have coordinated.

Part of my research is channeled through the Research group on International Human Rights, Immigration and Asylum Law of the Universidad Pontificia Comillas, which I currently lead. I collaborate very intensely, since 2009, with the research and teaching activities of the Odysseus academic network for legal studies on immigration and asylum, becoming deputy member for Spain of the Network in 2022. Within Odysseus, I have worked in several contracts with the European Commission, and in a Jean Monnet Network.

The impact of my research has attracted several international visiting PhD candidates to undertake a research stay under my guidance and a doctoral student to work under my supervision, on issues related to EU external action on migration and asylum.

I have been Associate Editor of European Papers from its creation in 2016 to 2020 and I am member, since 2018, of the Editorial Board of the Spanish leading journal on EU law, Revista de Derecho Comunitario Europeo, in charge of the evaluation and publication processes mostly regarding the EU area of freedom, security and justice, including migration and asylum law.

I regularly participate in peer-review processes for prestigious scientific journals particularly on EU law, migration law or international affairs, both at national and international level, as well as in the evaluation of national research projects, studies and PhD programmes.

I have obtained the certification by the Spanish Ministry of Education as Associate Professor, PhD Assistant Lecturer and Private University Lecturer (ANECA, 2016), and have been awarded the recognition of two six-year research periods (2010-2015; 2016-2021), which encompass my complete academic career.

Área Temática:	**Energía y transporte**
Nombre:	JARAMILLO FERNANDEZ, JULIANA
Referencia:	RYC2022-038316-I
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Título:	Passive radiative cooling materials for sustainable thermal management

Resumen de la Memoria:

Conventional cooling technologies account for 15% of the global electricity consumption and 10% of green-house gas emissions. As the energy demand for cooling is expected to grow tenfold by 2050, materials capable of extracting heat passively without any power supply, will be key to solve this energy challenge and move towards a low carbon energy transition. Taking inspiration from nature, my research focuses on reducing the energy footprint of conventional cooling approaches by developing innovative thermo-functional materials capable of cooling objects below ambient temperature even during daytime, with net zero energy consumption. My profile stands out by a strong multidisciplinary nature. I conduct research at the intersection of Thermal Photonics, Nanotechnology and Environmental Science and apply that knowledge to develop sustainable passive cooling solutions for Energy applications.

My PhD was on nanoscale heat transport. It was devoted to the fundamental understanding of heat transfer in thin films and to explore the possibility to dynamically modulate heat transfer across them. I gained a sound background in Thermal Nanoscience, in microfabrication techniques and ultrasensitive thermal characterization of micro/nanomaterials. Later during my postdoc in Sweden, I focused on thermal management in III-V based optoelectronic devices. I expanded my skills portfolio to Photonics. I managed and carried out a research project to improve thermal designs in a variety of integrated opto-electronic circuits. I gained knowledge in Photonics and strengthened my skills on thermal management. From this basis, I decided to focus my efforts into a multidisciplinary research line that merged the fields of Thermal Nanoscience and Photonics. I conceived a project to achieve improved thermal performance of devices that undergo critical heating, developing thermo-functional materials capable of providing passive radiative cooling (RC) i.e reducing the operating temperature without energy consumption. In 2017, I was awarded a Marie Curie Cofund competitive grant for conducting research in passive thermal management mediated by enhanced thermal radiation. I became one of the first researchers in Europe to do experimental work in the field of radiative cooling. Here, I have made impactful contributions, summarized as follows:

1)The generation of clean cooling through innovative scalable and sustainable RC materials that are simple to fabricate, cost-efficient and avoid the use of critical raw materials (Jaramillo et al. 2019, Jaramillo et al. 2022)

2)The integration of passive cooling in cascade with other renewable energy technologies such as PV (Silva-Oelker et al, 2022) and thermoelectricity (Astrain et al, 2023).

3)The collaboration between scientists and industry, engagement of relevant stakeholders.

Driven by a strong technology-transfer vision, I intend to bring passive cooling technologies to society, where they can really contribute to adaptation in a changing climate. For this, I have co-founded the start-up Cooling Photonics, where I am Chief Scientific Officer and head of the R&D team. I plan to consolidate this research line, focusing on all aspects of sustainability, pursuing circularity and elucidating the design principles of passive cooling mechanisms of biological organisms to develop new sustainable thermal management solutions.

Resumen del Currículum Vitae:

I am an Early Career Researcher (34 years) specialized in Thermal Nanoscience and Photonics for the Energy sector, focused on sustainable thermal management. I have received training in top-ranked international institutions within world-leading research groups, where I have established a strong track record. I received my PhD from CENTRALESUPELEC (France) in 2015, then did a 2-year postdoctoral stay at the Royal Institute of Technology – KTH (Sweden) and in 2017, only 1.5 years after my PhD, I obtained a Marie-Curie Cofund grant through a competitive international call to work at the Catalan Institute of Nanoscience and Nanotechnology - ICN2 (Spain).

Driven by a strong tech-transfer vision, in 2020 I co-founded the start-up Cooling Photonics (CP) where I am the Chief Scientific Officer. The start-up develops and aims to commercialize passive cooling solutions by exploiting a proprietary technology of which I am the principal inventor. CP is formed by a multidisciplinary team of 8 members and closed its 1rst investment round in 2022, increasing its valuation to 3M€ Here, I lead the R&D team where I supervise an associated researcher and two postdoctoral fellows (funded by the Marie-Curie Cofund and Torres Quevedo competitive calls, with proposals which I coordinated and contributed to write) and co-supervise a PhD candidate from the University of Florence. Currently, I am CP's principal investigator (PI) of the EURAMET-Green Deal project PaRaMetriC, where I lead tasks aiming at reproducible in-field radiative cooling performance testing for standardised indicators to evaluate radiative cooling technologies. I also participate in the MCIN project HiNano as WP leader, and in several industrial projects as tasks leader, where I work with relevant stakeholders to test the passive cooling technology on solar panels (AGBAR), motors (Mercedez-Bens), PV cover functionalization (Repsol) and battery cooling for electric vehicles (COMPOXI, Solar Box). My motivation is to bring sustainable thermal management to the service of society, contributing to a low carbon energy transition by reducing the intensive energy use of conventional cooling technologies.

In academia, I work at Universitat de Barcelona. During my research career, I have participated in 9 European, national and institutional projects, 4 of them with managerial responsibilities in the role of PI, including an EURAMET-Green Deal, a Marie Curie Cofund and 2 institutional technology transfer projects. I have published 16 peer-reviewed scientific articles in high impact journals (IF>17, e.g Adv. Science, Small and Nanoscale) with 1 Review article, 7 as 1rst author and 9 of them as corresponding author. Thanks to the relevance and quality of my work, I have been honored with prestigious awards and my research has been highlighted in journal covers and by the public media, being interviewed in national and international media (e.g. La Vanguardia, PV-Magazine, PhysOrg). I was invited as a Plenary Speaker at the IEEE NANO 2020 and have participated in prestigious international conferences with 4 invited talks. I have also been invited to give seminars at universities and research institutions. Finally, I am also involved in other scientific activities (e.g peer-review of articles, dissemination activities) and I co-organize the flagship Nanotechnology Council conference: IEEE NANO 2024.

Área Temática:	**Estudios del pasado: historia y arqueología**
Nombre:	ESTALRRICH ALBO, ALMUDENA MARÍA
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Título:	Biocultural Evolution of the genus Homo

Resumen de la Memoria:

During my time as a JdC Formación fellow, I opened a new line of research: The Biocultural Evolution of the genus Homo. Despite being known for 150 years, little is known about Neandertal children, and in general, few studies have been focused on the fossils of immature individuals. Therefore, I developed new approaches to studying the behavior (here, the way each individual conducts oneselves and their role within their group) of both Neandertals and prehistoric modern human children, being a pioneer in this field. During my stay in Arkansas, I am expanding this scope with the dietary transition (infant/juvenile/adolescent/adult) in each of the phases of human ontogeny. The innovative proposal is using different methodological approaches (stable isotopes on humans, zooarchaeology, dental calculus and microbiome), altogether can provide a pattern of variation between Homo neanderthalensis and Homo sapiens.

Following this line, I am currently starting an ambitious long-term project to characterize the patterns of variation during the ontogeny in both Homo neanderthalensis and Homo sapiens in Eurasia.

The objective of this project is to verify whether both human species possessed adaptive and/or cultural differences that are great enough to explain the replacement by modern humans during the Middle-Upper Palaeolithic transition. To do this, it aims to study the available human remains for the period available in different environmental and regional contexts, and to characterize the type of behavior developed not just in terms of dental wear, which will play a key role in my line of research, but to include also the skeletal study to provide the most complete paleobiological profile achievable, including pathologies and enthesopaties (musculoskeletal modifications due to occupational behavior) in immature and adult individuals from both species.

To do so, I aim to review skeletal collections of immature Neandertal and Homo sapiens fossils recovered in archaeological sites and curated at museums and universities of Europe. Initially, I will focus on the Middle to Upper Paleolithic transition in southern European regions where lately several ERC projects have been achieved (RESOLUTION BY Dr Talamo, SUCCESS by Dr Benazzi or SUBSILIENCE By Dr Marín-Arroyo).

The multiple-technical methodology proposed is based on the combination of microscopic and high-resolution macroscopic approaches. It is based on the studies of Dental Microwear Texture Analysis, Dental Topography Analysis and Occlusal Fingerprint Analysis, all 3D techniques, together with traditional microscopic inspection of skeletal remains, and this hollistic approach has not been applied yet in any institution in the world. This non-destructive combination will allow create the basis of behavioral and nutritional patterns and compare them with new proxies that are currently being developed in different projects regarding paleoclimatic, archaeozoological and nutritional records such as the mentioned before.

I plan to enlarge my interdisciplinary collaborations that are essential to enrich the work and enable more conclusive and general results to be obtained. I will create a specific database that will allow recording multiple variables that will be open-access not only for researchers interesting in the period of study but for others studying human fossils in a particular time/space.

Resumen del Currículum Vitae:

I am currently a Marie Skłodowska-Curie Action Global Fellow (MSCA GIF) at the University of Arkansas where I have spent the last two years developing a new non-destructive method to study dental topography in fossil teeth, based on the use of a high-resolution surface scanner and 3D analytical tools.

I received my Ph.D. in Paleontolology from the Universidad Autónoma de Madrid in February 2015 (Extraordinary Doctoral Dissertation Award). Since then I have obtained three competitive postdoctoral fellowships at the Senckenberg Research Institute and Natural History Museum in Frankfurt am Main, Germany (founded by the DAAD-Leibniz research fellowship), at the University of Cantabria and Instituto Internacional de Investigaciones Prehistóricas de Cantabria, Spain (founded by a Juan de la Cierva Formación Postdoctoral Fellowship), and a MSCA GIF (founded by the European Union, project ID 891529) at the University of Arkansas (USA) and University of Cantabria (Spain).

I am the first author of 10 of my 46 scientific papers (45 in JCR journals). I have seven co-authored book chapters (one of them is currently in press) and a non-JCR scientific paper. I have published in a diverse set of high-impact journals including Science, PNAS, Plos One, Am. J. Biol. Anthropol., J. Hum. Evol. Frontiers in Ecology and Evolution, L' Anthropologie and Antiquity, among others. I have been invited to seven international and national seminars to present my research.

Related to my main line of research I have obtained outstanding results that have been published in the principal journals related to human evolution, as well as multidisciplinary journals:

• Ontogenetic development of manual laterality and learning process in Neandertals (Estalrrich and Rosas, 2013) and AMH and the role of children within their groups (Estalrrich and Marín Arroyo, 2021; Estalrrich and Krueger, 2022).

• Indicators of sexual division of labor and behavioral specialization in Neandertals from Spain (El Sidrón), France (l' Hortus) and Belgium (Spy) based on the para-masticatory dental wear (Estalrrich and Rosas, 2015).

• Dietary reconstruction and abrasiveness of the diet (Estalrrich et al., 2017a).

• The development of habitual behaviors such as toothpicking since early Homo (Estalrrich et al., 2020) and how it was made (Estalrrich et al., 2017b).

I have participated in four international and three national research projects, being the Principal Investigator in two of them.

I have teaching experience at the Universidad de Cantabria and the University of Arkansas. I am currently supervising a Master' s thesis at the UC (Máster Universitario en Prehistoria y Arqueología). I have participated and organized outreach activities such as Pieza del mes de MUPAC, Ateneo de Santander, Pint of Science, Illustraciencia5 and "Día de la mujer y la niña en la ciencia.

I serve as a reviewer for Archaeological and Anthropological Sciences, Scientific Rep., Am. J. Biol. Anthropol., J. Hum. Evol., Naturwissenschaften, HOMO- Journal of Comparative Human Biology; Scientific committee for EJIP and AWRANA 2022; National Funding Agencies reviewer: Agencia Nacional de Investigación (ANI), New Zealand Dental Research Foundation (NZDRF), FWF Der Wissenschaftsfonds (Austrian Science Fund); Doctoral Dissertation and Master' s Thesis Committee. Recently, I received a positive I3 result.

Área Temática:	Estudios del pasado: historia y arqueología
Nombre:	JIMÉNEZ MONTES, GERMÁN
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Título:	El impacto de la migración extranjera en el comercio internacional de la Monarquía Hispánica (siglos XVI-XVII)

Resumen de la Memoria:

A lo largo de mi carrera, me he especializado en la historia social y económica del periodo moderno, enfocándome en la relación entre la migración extranjera y el desarrollo del comercio internacional mediante investigaciones a pequeña escala. Durante mi doctorado, estudié la presencia y actividad económica de mercaderes flamencos, alemanes y neerlandeses en la Sevilla de finales del siglo XVI. En mi etapa posdoctoral, estoy realizando una investigación sobre la migración laboral en la Andalucía del periodo moderno, enfocada en el papel de marineros y maestres de navío extranjeros en la Carrera de Indias en el final del siglo XVI e inicios del XVII.

Con mis publicaciones, he contribuido a tres problemas historiográficos sobre la migración en la edad moderna que cuentan con una larga tradición pero que, a la vez, mantienen una gran vigencia:

1) la adaptación de los migrantes a las sociedades receptoras mediante estrategias individuales y colectivas;
2) su contribución a la transformación de mercados regionales y suprarregionales;
3) y el papel que jugaron en el desarrollo de las formas de pertenencia y las identidades nacionales.

En esta nueva fase de mi carrera, continuaré explorando estas cuestiones con un enfoque más amplio que adopte una perspectiva comparativa y una escala temporal más amplia. Mi investigación se basará en la siguiente pregunta: ¿Cómo influyó la migración internacional en el desarrollo de relaciones entre las principales ciudades mercantiles de la España Moderna? Para contestar esta pregunta, compararé la evolución de la migración mercantil en varias ciudades españolas (Barcelona, Bilbao, Cádiz, Madrid, Sevilla y Valencia) y el desarrollo de conexiones entre ellas siguiendo dos perspectivas metodológicas complementarias.

Por un lado, centraré la perspectiva en la experiencia de los migrantes. Examinaré los marcos institucionales que regulaban el comercio a larga distancia en las distintas ciudades y cómo los extranjeros se adaptaron a ellos. Atenderé específicamente a la confianza de estos migrantes en las instituciones de acceso abierto, como las notarías públicas o la justicia real, así como en su relación con instituciones a las cuales tenían restringida la entrada en principio, como los distintos consulados mercantiles. Igualmente, evaluaré hasta qué punto hubo una evolución de las prácticas mercantiles en la España moderna conforme aumentaba la presencia extranjera en sus principales ciudades.

Por otro, prestaré atención a las ciudades como principal objeto de estudio. Investigaré hasta qué punto las ciudades en España compitieron para atraer la presencia de extranjeros y sus inversiones. Además, consideraré la existencia de formas de colaboración entre ciudades españolas para fomentar el comercio a larga distancia a pesar de las presiones por parte del poder central para limitar la influencia extranjera en la economía. Finalmente, estudiaré cómo los poderes locales negociaron la migración internacional con la monarquía y sus motivaciones para apoyar, o bien oponerse, a la llegada de individuos de orígenes concretos.

Con esta línea de investigación pretendo contribuir a nuestro conocimiento sobre el papel de la migración como factor de cambio económico en la Monarquía Hispánica y la Europa de tiempos modernos.

Resumen del Currículum Vitae:

En octubre de 2020, defendí mi tesis doctoral en la Universidad de Groningen. Inicié esta investigación en 2015, bajo la supervisión de Dra. Raingard Esser y Dr. Jan Willem Veluwenkamp, en el marco de una Marie Sklodowska-Curie – Innovative Training Network, gracias a una early-stage fellowship.

Previamente, realicé estudios de grado en Historia (2009-2013) y de máster en Estudios Históricos Avanzados especialidad Historia Moderna (2013-2014) en la Universidad de Sevilla. Durante el último curso académico de grado, realicé una estancia Erasmus en la Universidad de Gante.

Desde 2015 he publicado en revistas y editoriales de alto impacto, tanto en español como en inglés, sobre el comercio entre Andalucía y el norte de Europa en el siglo XVI. En 2022 publiqué la monografía A Dissimulated Trade: Northern European Timber Merchants in Seville (1574-1598) en la editorial Brill (SPI 6/96) en la serie The Atlantic World. Por otra parte, cuento con tres artículos en revistas indexadas: dos en la revista Studia Historica: Historia Moderna (Q2 según el JCI para 2016 y 2020), y un tercero en la revista TSEG-The Low Countries Journal of Social and Economic History (Q4 según el SJR para el primer año disponible, 2021). También he colaborado en obras colectivas publicadas en editoriales como Springer (SPI 4/96), Universidad de Sevilla (SPI 32/105) o Sílex (SPI 37/105), además de en la escritura de reseñas para revistas como The Journal of Early American History y en la realización de revisiones para revistas y editoriales de prestigio, como Peter Lang o Brill.

Mi perfil académico internacional destaca, también, por mi vinculación a proyectos competitivos (como ForSeaDiscovery, coordinado por Dra. Ana Crespo Soalana, o Andatlan II, coordinado por Dr. Juan José Iglesias Rodríguez y Dr. Jaime García Bernal) y por mis estancias breves en centros de prestigio como el CCSH-CSIC de Madrid (septiembre-noviembre de 2015) o la Universidad de Gales (Junio 2016). Por otra parte, he presentado mi trabajo en más de treinta conferencias y seminarios en ocho países distintos. En el último año, participé en el 8th IMHA International Congress of Maritime History organizado en Oporto (Portugal) y en el congreso Instrumentos financieros y acceso al mercado de crédito en la Edad Moderna, organizado por la Universidad Pablo de Olavide.

Además de mi carrera como investigador, tengo experiencia docente en los Países Bajos y en España. Trabajé como lecturer (docente) en la Universidad de Groningen desde enero de 2019 hasta diciembre de 2020. Durante ese periodo, impartí 340 horas en una diversidad de cursos, como el de Historia Moderna, Historia de las Migraciones o Introducción a la metodología. En septiembre de 2021, volví a España para realizar una estancia de un mes en el Madrid Institute for Advanced Study-Casa de Velázquez gracias a una ayuda François Chevalier. De octubre a diciembre de 2021, trabajé como profesor sustituto interino en la Universidad de Huelva con un contrato temporal a tiempo completo. En la actualidad, soy contratado Margarita Salas en la Universidad de Sevilla en donde, además de investigación, desarrollo tareas docente impartiendo varios cursos ofrecidos por el departamento de Historia Moderna.

Resumen de la Memoria:

The main research area of Dr. Lorenzo is computational oncology. This interdisciplinary field consists of the application of mathematical models and computational techniques from engineering to study cancer phenomena and advance the clinical management of tumors from the current population-based, observational standard to a personalized predictive paradigm. Dr. Lorenzo's research focuses on prostate cancer (PCa), which has not been extensively investigated within computational oncology and is a paradigmatic tumor type to benefit from its approach to reduce the current rates of overtreatment and undertreatment (affecting patients' quality of life and survival, respectively). Specifically, Dr. Lorenzo's work aims at developing computational technologies to obtain patient-specific forecasts of PCa growth and treatment response, while also investigating the biophysical mechanisms underlying these phenomena. The ultimate goal of Dr. Lorenzo's research is to use his computational technologies to assist physicians in the design of optimal monitoring and treatment plans for each individual PCa patient.

The work of Dr. Lorenzo relies on three key defining features: (i) biomechanistic models, which describe the key biophysical mechanisms underlying PCa growth and treatments using differential equations; (ii) model personalization using routine clinical and imaging data from each patient, such as serum Prostate Specific Antigen (PSA, a standard PCa biomarker) and magnetic resonance imaging (MRI); and (iii) computational methods from engineering to enable personalized model calibration and forecasting (e.g., finite elements, isogeometric analysis). Dr. Lorenzo has led pioneering developments of these three features to build his computational technologies for PCa in three main applications: (i) prediction of PCa response to radiotherapy to early identify recurring tumors; (ii) monitoring of untreated PCa growth (active surveillance) to early identify patients requiring treatment; and (iii) optimization of systemic drug-based therapies for advanced PCa, which has low survival rates.

Dr. Lorenzo has been working in computational modeling of PCa since his PhD at University of A Coruña (Spain, 2014-2018), which was carried out within the ERC Starting Grant of Prof. Hector Gomez. Then, he continued his research in the group or Prof. Alessandro Reali at the University of Pavia (Italy, 2017-2019, 2020-today) as well as in the groups of Prof. Thomas J. R. Hughes and Prof. Thomas E. Yankeelov at The University of Texas at Austin (USA, 2019-today).

As a postdoctoral researcher, Dr. Lorenzo has also contributed to the development of patient-specific imaging-based technologies to forecast breast cancer response early during neoadjuvant therapy (i.e., a standard pre-surgery drug therapy), which can be used to personalize treatment regimens and obtain optimal clinical outcomes with minimal toxicities. Additionally, Dr. Lorenzo has collaborated in investigations that aim at forecasting the spatiotemporal spread of COVID-19 infections to guide public health decision-making, identifying the role of the recently discovered glymphatic transport in Alzheimer's disease, and characterizing vulnerable atherosclerotic plaques in coronary arteries via biomechanical markers to facilitate their early detection.

Resumen del Currículum Vitae:

Dr. Lorenzo holds a joint BSc & MSc degree in Civil Engineering from University of A Coruña (UDC, Spain), where he graduated with honors and top of the 2013 class. He further obtained an MSc in Research in Civil Engineering in 2014 and his PhD in 2018 also at UDC, both within the framework of an ERC Starting Grant. He has received multiple awards for his outstanding academic track from UDC and the Galician and Spanish governments, including the "Outstanding Award in PhD studies" from UDC. Dr. Lorenzo continued his academic career at the University of Pavia (Italy, 2017-2019, 2020-today) and The University of Texas at Austin (USA, 2019-today). To date, Dr. Lorenzo has participated in 20 R&D projects and has accumulated 68 months of international mobility in Italy and the USA, which have allowed him to build an extensive international and multidisciplinary scientific network. As a postdoctoral researcher, he has been awarded two fellowships (approx. total value: 310,000 EUR) in highly-competitive international calls (Peter O'Donnell Jr. Postdoctoral Fellowships, Marie Skłodowska-Curie Global Fellowships) to pursue his own research as principal investigator (PI).

Dr. Lorenzo has authored 3 book chapters and 18 articles in peer-reviewed scientific journals (8 D1, 14 Q1, 2 Q2, JCR 2022), including 13 as first (co-)author or corresponding author, 1 as senior author, and 13 without his PhD advisor. He has been selected as reviewer in 16 peer-reviewed journals (7 Q1, 6 Q2, JCR 2022) and review editor in 1 journal (Q2, JCR 2022). Dr. Lorenzo has also authored 31 oral and 13 poster contributions in national and international scientific conferences and workshops, being presenting author of 31 (9 as invited speaker, 1 as invited keynote speaker, 1 as invited plenary speaker) and receiving 7 awards. His participation in international congresses further includes organizing 7 minisymposia, chairing technical sessions in 6 minisymposia, and serving in 3 scientific committees. Dr. Lorenzo has also given 13 invited seminars in academic institutions worldwide. Moreover, he has taught in 6 graduate courses and has supervised a total of 1 PhD thesis, 3 master theses, as well as 2 undergraduate and 5 graduate research assistants. Dr. Lorenzo has also served as external reviewer of 1 PhD thesis and member of 1 PhD thesis committee. Additionally, he is a co-inventor in 1 international patent and has engaged in scientific outreach activities to the general public, including a first-author article in Investigación y Ciencia, 2 invited popular science talks, and 15 engineering workshops and seminars for children and teenagers.

Área Temática:	Psicología
Nombre:	TABAS DIAZ, ALEJANDRO
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Título:	Predictive coding in the human subcortical auditory pathway

Resumen de la Memoria:

Humans effortlessly process over 200 spoken words per minute in casual conversation. Speech recognition algorithms still fail at this challenging task. Our superior performance stems from our capacity to predict what the speaker may say next. Understanding how the brain uses these predictions to process the sensory input is crucial to understand perceptual function and dysfunction: dyslexia, autism and psychosis have all been linked to an impaired handling of predictions.

Hierarchical predictive coding (HPC) is the current leading framework to understand how predictions help us processing sensory inputs. However, HPC is only compatible with the function and organisation of the cerebral cortex. This is a decisive shortcoming: while only cortical stages have the foresight to perform conceptually accurate predictions, only subcortical stations have the temporal properties required to correctly process fast sensory inputs.

A large part of my previous research has been dedicated to the task of testing whether subcortical pathways partake in predictive processing in the human brain. After demonstrating that pure tones, a highly simplified static sound that does not exist in nature, are processed according to the principles of HPC, I established that this was a general phenomenon that generalised also to dynamic sounds that are characteristic of the speech signal. On subsequent research I evaluated whether our current understanding of HPC could be able to account for our subcortical data, and concluded a deep revision of the theory was urgent.

In my future research I will reformulate HPC as an integrated theory explaining how cortical and subcortical stages work together to proficiently process fast and complex sensory inputs like speech.

I will use a unique experimental-theoretical approach to study the human auditory pathway as a model for sensory pathways in four work packages (WPs). WP1 will use cutting-edge human neuroimaging to unravel the macroscopic implementation of predictive coding in the auditory pathway, revealing the neural circuitry responsible for the transmission of predictions.

WP2 will use innovative model-based neuroimaging to identify the neural mechanisms responsible for the generation of conceptually accurate and temporally precise predictions. The outcomes will explain how different ranges of temporal specialisation are necessary to predict the incoming sensory input, and clarify the role that subcortical stations play in predictive coding.

In WP3 I will develop a ground-breaking computational model to identify the neural mechanisms implementing predictive coding in the thalamocortical loop. The model will reframe predictive coding as a thalamocortical computation, explaining how exactly predictions are used to process the sensory input.

WP4 will use big-data analytics to disentangle how cortical and subcortical stages work together to swiftly process speech. The results will provide for a comprehensive model of predictive coding of speech, and test several key assumptions of the theory that seem to be challenged by the physiology of the subcortical sensory pathways.

The outcomes will turn the cortical paradigm of HPC into an integrated theory of cortico-subcortical interactions, revolutionising our understanding of perceptual function and dysfunction.

Resumen del Currículum Vitae:

Scientific contributions

During my PhD I developed a new understanding of how the perception of musical pitch, harmony and consonance emerge in the brain. Combining mathematical and experimental methods we explained how auditory cortex extracts pitch information from the thalamic representations of sounds. During my PhD, I independently developed the hypothesis that the perception of musical harmony emerges naturally from this pitch extraction process, which we corroborated experimentally, suggesting that musical consonance and dissonance are universal percepts in mammals.

In my first postdoc I combined a deep theoretical understanding with cutting-edge human neuroimaging to provide for the first demonstration that the subcortical human brain plays an essential role in predictive coding, a leading theory on sensory processing. This important and subsequent findings have established my profile in the community and granted me international recognition.

Currently, I am a research fellow at the Computational and Biological Learning Lab in Cambridge University, where I am modelling the neural dynamics responsible for contextual inference in the human brain.

Funding

The Technische Universität Dresden granted me an 8,888€ fellowship or grant writing in June 2022. In addition, I have submitted two extensive research proposals, one to the German DFG Eigenestelle program (budget 280,182€) and one to the ERC Starting grant program (budget 1,499,945€), which are currently under review.

Technical capacities

With a combined background in Physics (diploma), Machine Learning (master), Neural Modelling (PhD), Experimental Neuroimaging (first postdoc), and Bayesian brain modelling (second postdoc), I have a truly unique profile in my field. My experiments integrate cutting-edge experimental

techniques with paradigms that are grounded in a deep understanding of the underlying theory. My models integrate sophisticated mathematical tools with a deep understanding of the experimental data and neurophysiology. My formal training in statistics ensures that my research conforms to the highest statistical standards, a particularly valuable feature in human neuroimaging research.

Collaborations
  The great mobility of my research career has granted me a really extensive network of international collaborators in Germany, The Neatherlands, the USA, Switzerland, and the UK.

Leadership
  During the last 4 years of my first postdoc I have lead a team composed by master thesis students, Erasmus interns, and student assistants, which had different roles and responsibilities (data analysis, participant recruitment, scanning, etc). I am currently co-supervising a PhD student.

Contributions to society
  My findings in subcortical predictive coding are having strong repercussions for clinical research, until recently mostly focused on the cerebral cortex. Several collaborators are applying or planning to apply my findings to the study of dyslexia, autism, and schizophrenia.

Mentoring
  Aided by my diverse methodological toolkit, I have/am independently mentored/ing six master students, which have learnt a unique hybrid experimental-theoretical skillset. Moreover, I have independently developed two courses for the Master Program in Cognitive-Affective Neuroscience design to teach computational methods to the next generation of cognitive neuroscientists.

Área Temática:	**Tecnologías de la información y de las comunicaciones**
Nombre:	BARRERA VILAR, DAVID
Referencia:	RYC2022-038394-I
Correo Electrónico:	dabarvi@iteam.upv.es
Título:	Development of optical fiber Sensors in multicore fibers

Resumen de la Memoria:

My research has focused on developing and manufacturing optical devices for communication networks and sensors. I have developed a system for inscribing fiber gratings in single-core and multicore optical fibers that is one of the most advanced in Europe and can selectively inscribe the individual cores of multi-core fibers. This development helped me to carry out an intense research activity, designing and developing innovative and disruptive devices, and has allowed me to develop scientific collaborations with important international research centers.

Currently, I am developing my own research line through a project (JIN project, PID2020-120071RJ-I00) obtained in the 2020 call for "proyectos de I+D+I" within the framework of the Programas estatales de generación de conocimiento y fortalecimiento científico y Tecnológico del sistema de I+D+I y de I+D+I orientada a los retos de la sociedad. In this project, I aim to control the crosstalk in multi-core fiber to implement optical communication devices and fiber optic sensors.

Resumen del Currículum Vitae:

My research activity has been reflected in a total of 43 articles in scientific journals, 32 of which belong to the first quartile of the Journal Citation Reports, and a total of 62 publications in international and national scientific conferences, four of which were invited talks given by me. The total number of citations is 1176, with a current h-index of 21 (source: Web of Science).

I participated in five European projects funded by the European Commission and a total of seven national projects. The most recent one, in which I am the PI, is financed by the Ministerio de Ciencia e Innovación under the programs "Programa Estatal de Generación de Conocimiento y Fortalecimiento Científico y Tecnológico del Sistema de I+D+i" and "Programa Estatal de I+D+i Orientada a los Retos de la Sociedad" for developing the project "Inter-core crosstalk for future space division multiplexing networks and optical sensor devices" PID2020-120071RJ-I00, where I am developing a new concept of SDM devices.

I am author of two patents in the last 10 years, "Sistema y método de monitorización de potencia y temperatura en redes de fibra óptica" patent with substantive examination developed in collaboration with UC3M, and "Procedimiento de fabricación de RFGB y sensor que incorpora un RFGB obtenido mediante dicho procedimiento" which is currently being exploited by CALSENS S.L. (https://cal sens.com/) with an annual fee of €50k.

At the teaching level I have codirected two doctoral theses, "Diseño de sensores de fibra óptica y esquemas de interrogación". by Demetrio Sartiano (3 Q1 publications), 01/14/21, and "Diseño, fabricación y caracterización de sensores basados en fibras ópticas multinúcleo" by Javier Madrigal Madrigal (10 Q1 publications), 01/12/22. Valeria Katherine Hernández Ambato is currently doing her Ph.D. under my supervision at the Universitat Politècnica de València.

I received the Extraordinary Prize for Doctoral Thesis awarded by the Universitat Politècnica de València. I have obtained a positive evaluation by ANECA in Contratado Doctor's and Ayudante Doctor's figure and the recognition by CNEAI for two six-year research periods. I recently received the I3 certification from the Secretaría General de Universidades.

Área Temática:	**Tecnologías de la información y de las comunicaciones**
Nombre:	DE JONGE , DAVE
Referencia:	RYC2022-035229-I
Correo Electrónico:	davedejonge@iiia.csic.es
Título:	Automated Negotiation in Highly Complex Scenarios

Resumen de la Memoria:

My PhD project focused on algorithms for automated negotiation in scenarios where the number of potential deals is astronomically large and where calculating the utility value of a deal is a computationally complex task. I implemented a negotiation algorithm based on multi-object Branch & Bound, called NB3, which I tested on a multi-agent variant of the traveling salesman problem and on the highly complex game of Diplomacy. Furthermore, I worked on the implementation of electronic institutions to regulate online social interactions.

One of the main conclusions drawn from my work on Diplomacy was that in automated negotiation the question how the utility values of the proposals should be calculated may be just as important as (or even more important than) the negotiation algorithm itself. This was a very important conclusion, because until then, in automated negotiations research, the calculation of utility values was mostly abstracted away and considered to be of minor importance.

As a postdoc at Western Sydney University (WSU) I worked on the topic of general game playing combined with automated negotiation. As far as I know, no one else had ever worked on this combination before. Specifically, I invented a new algorithm, based on Monte Carlo Tree Search, that was able to play non-zero-sum games, while at the same time negotiating with its opponents about what moves to make, in order to ensure mutually beneficial outcomes. Furthermore, I invented a new game-theoretical solution concept for extensive-form games in which the players are allowed to negotiate binding agreements about the strategies they will play.

I organized the Diplomacy League of the Automated Negotiating Agents Competition (ANAC) from 2017 till 2019, and I analyzed the negotiation algorithms submitted by the participants. It turned out that none of them was able to truly improve game play w.r.t a non-negotiating player, so I concluded that much more work needs to be done in the field of automated negotiation to tackle such complex domains.

In 2018 I returned to the IIIA-CSIC to work on algorithms that enable logistics companies to negotiate about how they could cooperate with each other. This involved another highly complex negotiation domain with an astronomical number of possible deals, and in which calculating the utility values of just a single deal already amounts to solving a vehicle routing problem. Nevertheless I managed to implement a multi-objective search algorithm that was able to find mutually beneficial deals that significantly decrease the costs of the companies.

Furthermore, I implemented an extremely simple new negotiation algorithm, called MiCRO, for small linear domains that are typically used in the Automated Negotiating Agents Competition (ANAC). Despite its simplicity it outperformed the very best negotiation algorithms that participated in ANAC, even though these other algorithms were based on highly complex machine learning techniques. I expect that this will have a profound influence on future research on automated negotiation, since it proves that the test cases used in ANAC are actually too simplistic, and future researchers should use more complex test cases, such as Diplomacy.

Resumen del Currículum Vitae:

I am a postdoctoral researcher at the Artificial Intelligence Research Institute (IIIA-CSIC) in Barcelona, Spain, and Adjunct Fellow with the School of Computer, Data and Mathematical Sciences at Western Sydney University, Australia.

I received my PhD in computer science in 2015 from the Universitat Autònoma de Barcelona (UAB) and I conducted my PhD research at the Artificial Intelligence Research Institute (IIIA-CSIC) in Spain, under supervision of prof. Carles Sierra. My research focused on algorithms for automated negotiation in scenarios where the number of potential deals is astronomically large and where calculating the utility value of a single deal is a computationally complex task. I won the first prize in the Diplomacy Challenge of the ICGA Computer Olympiad in 2015 (29 June – 5 July 2015, Leiden, The Netherlands), and I won the second prize at the Automated Negotiating Agents Competition (ANAC) 2014 that was held at AAMAS (5-9 May 2014, Paris, France). In 2015 I graduated cum laude and later, in 2018, I received for my PhD thesis a distinguished dissertation award (premi extraordinari de doctorat) from the UAB.

After completing my PhD, I received an Endeavour research fellowship from the Australian department of Education for a postdoc position at Western Sydney University, Australia. Here, I started doing research on the topic of general game playing and, more specifically, the combination of general game playing with automated negotiation. In the context of this research I received a best paper award, out of 121 submissions, at the Australasian Joint Conference on Artificial Intelligence (AI 2016, 5-8 December 2015, Hobart, Australia). In 2017 I got promoted to Associate Lecturer. In this role I taught various subjects related to computer science, and I was responsible for the design of a one-semester course on quantum computing.

In 2018 I moved back to the IIIA-CSIC to work on the development of negotiation algorithms for real-world collaboration between logistics companies. Later, I was awarded a Juan de la Cierva - Incorporación research fellowship to work at the IIIA-CSIC for the period 01/07/2020 – 30/06/2023.

Furthermore, from 2017 to 2019 I have been the organizer of the Diplomacy League in the Automated Negotiating Agents Competition, which was held each year at the IJCAI conference, and I was program chair of the 7th International Conference on Agreement Technologies (AT 2020, 14-15 September 2020, online). Also, I have won a best paper award at the 3rd International Conference on Agreement Technologies (17-18 December 2015,

Athens, Greece), and the best early career researcher paper award at the 6th International Conference on Agreement Technologies (6-7 December 2018, Bergen, Norway). I'm in the program committees of IJCAI, AAAI, and AAMAS, and I have reviewed for top journals such as AI Journal and JAIR.

I have supervised one PhD student, on the topic of game theory applied to decision making for autonomous vehicles. He has submitted his thesis and will defend it in March 2023.

I participated in 3 international projects, and I have 7 journal publications, of which 6 as the first/corresponding author. Furthermore, I published 4 full papers at Core A* conferences (3 as first/corresponding author) and 4 more short papers at A* conferences (of which 2 as first/corresponding author).