



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2018

Turno de acceso general

Nombre: PEREZ FERNANDEZ, JUAN
Referencia: RYC2018-024053-I
Área Temática: Biociencias y biotecnología
Correo Electrónico: juanperez190183@gmail.com

Título:

THE DOPAMINE SYSTEM IN EARLY VERTEBRATE EVOLUTION AND THE DIRECT SNC/VTA MODULATION OF VISUAL RESPONSES

Resumen de la Memoria:

My research has primarily focused on the dopaminergic mechanisms for motor control. During my PhD I showed that the dopaminergic system is extremely well conserved through vertebrate evolution, as reflected in lampreys, oldest living vertebrates. During my postdoc, I used this degree of conservation as an advantage to unveil novel mechanisms using experimental preparations that would not be possible in classic mammalian models.

I combined during my PhD molecular and anatomical techniques to show that dopaminergic receptors show a high degree of conservation. Both their phylogeny and expression areas in the brain show a large degree of similarity with mammals, suggesting numerous conserved functions. Accordingly, we uncovered the direct and indirect pathways in the lamprey striatum, together with Prof. Sten Grillner at Karolinska Institutet. The dopaminergic SNC role modulating motor responses via the basal ganglia was already present in lampreys, evoking the same cellular effects.

I then started my postdoc in Karolinska Institutet in 2013, learning electrophysiological techniques to analyze a novel projection from the substantia nigra pars compacta (SNc) to the optic tectum/superior colliculus. Using a multidisciplinary approach and developing novel preparations to measure neuronal activity and behaviour in response to visual stimuli, I showed that the same SNc neurons modulate striatum and tectum in parallel, and that the SNc dopaminergic modulation has conspicuous effects on tectal commands for generating eye/orienting movements, providing a novel substrate to understand the eye movement deficits observed in Parkinson's disease.

I also studied during my postdoc how multisensory information is integrated in tectum to decide where to redirect gaze. I later coordinated a study finding that individual neurons can co-release glutamate and dopamine in striatum, but only dopamine in tectum. Only two additional examples of neurons segregating different neurotransmitter in different axonal branches were previously known, in crabs and in motoneurons in the spinal cord of mice. Thus, we provided for the first time evidences of axonal branches from the same neuron exerting different effects in the brain.

Resumen del Currículum Vitae:

During the two main periods in my scientific career (as a PhD student and later as a postdoc), I have published 13 articles in good journals. 6 of them as a first author, one as last author. 8 of them independently of my thesis supervisor. I have two more manuscripts in preparation. I am also the author of two book chapters. Additionally, I have presented my work in numerous international meetings, having more than 30 conference contributions.

First author: Neuron, eLIFE, Journal of Comparative Neurology (3), Frontiers in Neuroanatomy.

Last author: Current Biology (in press, will be published online January 31st).

Co-author: Journal of Neuroscience, Frontiers in Neural Circuits, PLoS One, Frontiers in Neuroanatomy, Progress in Brain Research, Brain Research Bulletin.

During my scientific career, I have made a special effort in acquiring a multidisciplinary background, learning multiple experimental skills. I combine molecular skills with a broad palette of anatomical techniques (immunohistochemistry, in situ hybridization, tracer injections, etc.), and electrophysiology (extracellular and patch-clamp recordings). Moreover, we have developed in the lab an experimental preparation that allows us to analyse electrophysiological activity together with behaviour in response to visual stimuli. I am now developing optogenetic tools in the lamprey to analyse the impact of specific neuronal populations at both the circuit and behavioural level.

I had a great deal of independence to perform my research during my postdoc, largely developing my own experimental approaches, techniques and concepts. Consequently, in my last part of the postdoc I led a study in which I sign as senior author. During my postdoc, I have supervised one postdoc and two medical students. One of the students (Tobias Wibble) chose me later as his PhD mentor. I am currently supervising a PhD student. Additionally, I have also contributed as referee for several journals: PNAS, Journal of Anatomy, Journal of Chemical Neuroanatomy and PeerJ.



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Nombre: REY RICO, ANA
Referencia: RYC2018-025617-I
Área Temática: Biociencias y biotecnología
Correo Electrónico: ana.rey.rico@udc.es

Título:

Targeted and controlled delivery systems of bioactive molecules

Resumen de la Memoria:

My research is focused on the design of controlled delivery systems of bioactive molecules for different tissue engineering approaches. During my career (MSc Molecular Biology, PhD Pharmaceutical Technology and Postdoc in regenerative medicine and gene therapy), I have gained a multidisciplinary background that places me in an excellent position to face the challenge of this research.

-After obtaining my degree in Biology, I did my PhD thesis at the Department of Pharmacy and Pharmaceutical Technology at the Faculty of Pharmacy (2007-2011), in a reference group on drug delivery approaches under C. Alvarez-Lorenzo and A. Concheiro supervision. Working in a multidisciplinary environment, I got experience on the design of delivery systems of bioactive molecules namely drugs and growth factors, as well as their biological application in different cell culture models. The translational suitability of the biomaterials tested and the type of assays performed covered fields as diverse as bone tissue engineering and cancer therapy and generated the publishing of 10 scientific papers in top Pharmaceutical sciences and Tissue engineering-related journals as J Control Release, Eur J Pharm Biopharm, Acta Biomater or Eur Cell Mater, and 2 patents.

-In 2012 I got a postdoctoral research fellowship at the Center of Experimental Orthopaedics in Homburg/Saarland (Germany), a pioneer center on the use of recombinant adeno-associated viral (rAAV) vectors to directly penetrate chondrocytes matrix. Being part of this group (led by M. Cucciarini and H. Madry) allowed me to apply my previous knowledge on controlled delivery systems to the field of viral gene therapy. I started a completely new research line in the group by developing polymeric-based delivery systems to increase the potential of rAAV-mediated gene transfer for the goal of cartilage repair and resulted in the publication of 12 scientific papers in top journals as Acta Biomater, ACS Appl Mater Interfaces, Int J Nanomedicine or Mol Pharm, all as a first author and 7 as corresponding author. In addition, the novelty and applicability of my research was recognized with several distinctions as the HOMFOR grant (Saarland University, 2015) and the Julián Francisco Suarez Freire prize (Academia de Farmacia de Galicia, 2016). Also, I got a grant from the top German institution for research (DFG) for a position as Principal Investigator (2016-2017).

Alongside, I have participated in other projects within the group that have generated other 25 publications in the majority of them being the first or second author, and I have co-authored 2 book chapters.

-In 2018 I was one of the two selected researchers of the highly competitive InTalent UDC-Inditex Programme and I joined to the Advanced Scientific Research Center (CICA) from the Universidade da Coruña to continue my independent research career currently based on the design of controlled gene delivery systems with a special focus on non-viral-mediated gene transfer.

Resumen del Currículum Vitae:

Education:

2011: PhD. Pharmacy, 2011, Universidade de Santiago de Compostela, Spain.

2004: Bachelor in Molecular Biology, 2004 Universidade de Santiago de Compostela, Spain.

Research Experience:

2018: Distinguished researcher (Intalent-UDC program): Universidade da Coruña, Spain

2016-2017: Researcher, Principal Investigator: Center of Experimental Orthopedics, Saarland University, Germany

2012-2016: Postdoctoral Researcher: Center of Experimental Orthopaedics, Saarland University, Germany.

2007-2011: PhD researcher: Pharmacy and Pharmaceutical Technology Department, Faculty of Pharmacy, Universidade de Santiago de Compostela.

Most important grants, prizes and scholarships obtained:

-Intalent (Inditex-Universidade da Coruña) (2018): Distinguished researcher.

-Julián Francisco Suárez Freire Prize from the Real Academia de Farmacia de Galicia for Young Investigators (2017): Best research paper in biopharmaceutical field

-DFG (German Research Foundation Deutsche Forschungsgemeinschaft) (2016): Temporary position for Principal Investigator

-Homburger Forschungsförderungsprogramm HOMFOR (2015): Best research project from Faculty of Medicine, Saarland University, Germany.

-Deutschen Akademischen Austauschdienst (DAAD) (2015): Travel assistance grant for the Orthopaedic Research Society annual meeting (ORS) (Las Vegas, USA)

-Extraordinary Doctoral Award (2014).

Publications:



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-Author of 48 publications (one more in press): 10 Review papers and 39 Research papers; 35 in Q1 journals including Acta Biomater, ACS Applied Mat Interfaces, ACS Mol Pharm, Sci Reports, Int. J. Nanomedicine, and J. Control. Release.

First author: 21; Corresponding author=7

-Co-author of 2 book chapters

-Co-inventor of 2 Spanish patents already granted with previous examination.

Congress contributions:

82 reviewed-before-acceptance international or national conferences (28 oral communications and 54 poster contributions)

Teaching and student supervision activities:

2018- present: Lecturer in the Master in Assistance and Health Research (MAIS), Universidade da Coruña, Spain.

2017: Lecturer in the PhD/MD program at Faculty of Medicine, Saarland University, Germany.

2016-2017: Lecturer in 2 international teaching module at IMOPA (Ingenierie Moleculaire et Physiopathologie Articulaire; Faculty of Pharmacy, University of Lorraine, Nancy, France.

2016: Lecturer in PhD program Research and Development of Medicines at Faculty of Pharmacy, Universidade de Santiago de Compostela, Spain.

-Supervision of six undergraduate and master students with biological, pharmaceutical and medical backgrounds (Universidade da Coruña, Universidade de Santiago de Compostela, Saarland University).

Commissions of Trust:

-Referee of more than 20 journals in the area of biomaterials, gene therapy, cell biology, drug delivery and pharmaceutical technology including ACS, Elsevier and Nature journals.

-Reviewer of projects for Dutch Arthritis Foundation (DAF, Reumafonds, Netherlands)

-Jury member of 5 PhD theses (Faculty of Pharmacy, University of Santiago de Compostela 2015, 2016; 2018; Coruña University Hospital Complex, University of a Coruña, 2018).

-Member of the UniGR confederation (<http://www.uni-gr.eu/en/>).

-Member of TERMIS (Tissue Engineering and Medicine Regenerative International Society).

Accreditations:

-Assistant Professor (ANECA)

-Design of Projects and Procedures with Animals (Function D, Xunta de Galicia)



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Nombre: GONZALEZ DOBLAS, VERONICA
Referencia: RYC2018-024032-I
Área Temática: Biociencias y biotecnología
Correo Electrónico: veronica.gonzalez-doblas@inra.fr

Título:

Plant cell integrity control in changing environments

Resumen de la Memoria:

Plants, as sessile organisms, are constantly obliged to adapt to changing environments. I started my scientific career in Málaga in Botella's lab interested in studying plant tolerance mechanisms to abiotic stress. During my PhD, I studied the importance of sterol composition as signaling for plant growth and development. We performed a genetic screen for second-site suppressors mutation of an Arabidopsis drought hypersensitive mutant affected in sterol biosynthesis. Characterization of this suppressor identified an E3 ubiquitin ligase as positive regulator of the major rate-limiting enzyme controlling the sterol pathway, essential for correct developmental processes (Doblas*, Amorim-Silva* et al., Plant Cell 2013). This research increased my interest on cell integrity surveillance control mechanisms. I also collaborated in the analysis of TETRATRICOPEPTIDE THIOREDOXIN-LIKE gene family and their implication in osmotic stress tolerance (Lakhssassi et al., Plant Physiology 2012); and in a project concerning the increasing of vitamin C content in tomato fruits (Amaya et al., Biotechnology Journal 2015).

After my PhD I moved to Switzerland to join Geldner's lab to investigate Casparian strip (CS), the root barrier controlling the entrance of substances from the soil. I collaborate in a forward genetic screen to identify Arabidopsis CS mutants and in the characterization of a receptor-like cytoplasmic kinase, SGN1, required for correct fusion of CS membrane domains (Alassimone*, Fujita* et al., Nature Plants 2016).

For my main project, I was curious about how precisely plants control the functionality of CS as extracellular barrier. Through an ambitious project, we successfully identified two new small peptide ligands that we named as Casparian strip Integrity Factor (CIF1/2) and their receptor kinase (SGN3). CS integrity is constantly checked by CIF1/2 produced in the vasculature. In the absence of an intact CS, the peptides leak out between the endodermal cells reaching the SGN3/SGN1 module and activating a signaling cascade to seal the barrier. This mechanism represent an exquisite model for how the root can control whether CS barrier is intact or not, and this is essential for plant nutrition and stress responses (Doblas et al., Science 2017; Doblas et al., Current Opinion in Plant Biology 2017).

Recent analyses have revealed that secreted peptides are essential cell-to-cell signaling components, relevant during plant growth and development, as well as in defense responses. In order to continue increasing my knowledge on peptide signaling as surveillance control mechanism I moved to Höfte's lab in France. During this year I have collaborated in the study of how plant monitor their cell wall integrity through the study of the peptide RALF34 and its receptor THESEUS1 (Gonneau*, Desprez* et al., Current Biology 2018; Doblas et al., The Cell Surface 2018). An exciting challenge for the future is to uncover small peptides in crops to understand how these key components coordinate systemic responses to environmental stimuli.

Resumen del Currículum Vitae:

PUBLICATIONS

- Doblas VG, Gonneau M and Höfte H., The Cell Surface 2018 Sept; 3:1-11. I JCR: no index.
 - Gonneau M*, Desprez T*, Martin M, Doblas VG, Bacete L et al., Current Biology 2018 Aug; 28:2452-2458. I JCR: 9.251.
 - Doblas VG, Geldner N and Barberon M., Current Opinion in Plant Biology 2017 Oct; 39:136-143. I JCR: 7.349
 - Doblas VG, Smakowska-Luzan E, Fujita S, Alassimone A, Barberon M et al., Science 2017 Jan 20;355 (6322):280-284. I JCR: 41.058.
 - Alassimone J*, Fujita S*, Doblas VG, Van Dop M, Barberon M et al., Nature Plants 2016 Jul 25;2:16113. Doi 10.1038. I JCR: 11.471.
 - Amaya I, Osorio S, Martinez-Ferri E, Lima-Silva V, Doblas VG et al., Biotechnology Journal 2015 Mar;10(3):490-500. I JCR: 3.507.
 - Doblas VG*, Amorim-Silva V*, Posé D, Rosado A, Esteban A et al., Plant Cell 2013 Feb;25 (2):728-743. I JCR: 8.228.
 - Lakhssassi N, Doblas VG, Rosado A, del Valle AE, Posé D et al., Plant Physiology 2012 Mar;158 (3):1252-1266. I JCR: 5.949.
- * equal contribution; I JCR (Impact Index JCR 2017)

FELLOWSHIPS

- Advanced Postdoctoral Mobility Fellowship Fonds National Suisse de la Recherche Scientifique . Dec 2017.
- Postdoctoral Fellowship Fundación Alfonso Martín Escudero . Feb 2014.
- PhD fellowship Formación Personal Investigador (FPI) del Ministerio de Educación y Ciencia (MEC). Sept 2006.
- Short-term fellowship FPI for Sweden. May 2010
- Short-term fellowship FPI for USA. Sept 2007.
- Master mobility fellowship MEC. Jan 2005.
- Research student collaborator fellowship MEC. Oct 2003.

RESEARCH EXPERIENCE

- Since Dec 2017: Advanced Postdoc. Institute Jean-Pierre Bourgin, INRA Versailles, France.



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- Feb 2013- Nov 2017: Postdoc. University of Lausanne, Switzerland.
- July-Dec 2012: Postdoc. University of Málaga, Spain.
- Sept 2006- June 2012: PhD student. University of Málaga, Spain.
- May- August 2010: Visiting scientist. Umea Plant Science Centre, Sweden.
- Sept-Dec 2007: Visiting scientist. University of Riverside, California, USA.
- Jan 2005 June 2006: Master student. University of Málaga, Spain.
- Oct 2003- June 2004: Research collaborator. University of Málaga, Spain.

EDUCATION

- 2012 PhD in Molecular Biology and Biochemistry at University of Málaga, Spain.
- 2006 Master degree in Biotechnology at University of Pablo de Olavide, Sevilla, Spain.
- 2004 License degree in Biology at University of Málaga, Spain.

Teaching experience

- Teaching assistant at University of Lausanne, Switzerland, 352h.
- Teaching assistant at the University of Málaga, Spain, 117h.

Oral contribution to conferences

- 2018 Sept, Málaga, Spain.
- 2017 Sept, Lisbon, Portugal.
- 2016 Sept, Bischoffsheim, France.
- 2015 Dec, Madrid, Spain.
- 2015 Sept, Ghent, Belgium.
- 2014 Sept, Regensburg, Germany.

Invited Lectures

- 2018 May, University of Málaga, Spain.
- 2017 April, University of Málaga, Spain.
- 2017 Jan, Gregor Mendel Institute in Vienna, Austria.
- 2016 Oct, Jean-Pierre Bourgin Institute INRA Versailles, France.
- 2015 Nov, University of Málaga, Spain.
- 2013 April, University of Rome Sapienza, Italy.



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Turno de acceso general

Nombre: MENDOZA SOLER, ALEXANDRE DE
Referencia: RYC2018-025601-I
Área Temática: Biociencias y biotecnología
Correo Electrónico: alexmendozasoler@gmail.com

Título:

Comparative epigenomics in eukaryotes and the evolution of genome regulation

Resumen de la Memoria:

I am a biologist who studies the evolution of gene regulation in eukaryotes through comparative genomics, epigenomics and experimental approaches. My long-term goal is to understand how genomic changes underpin eukaryotic diversity, and specifically how different layers of gene regulation play a role in major evolutionary transitions.

During my research career I have held 3 full-time research positions, two in Spain as a PhD student at the University of Barcelona and as a postdoctoral researcher at the Institute of Evolutionary Biology (CSIC), plus 4 years of international postdoctoral experience in Australia at the University of Western Australia.

I started my research career working as an undergraduate student at the laboratory of Prof. Iñaki Ruiz-Trillo at the University of Barcelona funded by an undergraduate fellowship (AGAUR Beca de col·laboració). During that year I studied the evolution of MAGUK proteins in animal genomes, resulting in my first publication (BMC Evol. Biol).

Then I obtained a FPI fellowship from the Spanish government to join the laboratory of Prof. Ruiz-Trillo for my masters and PhD. During my PhD I developed projects on comparative genomic analyses between animals and their extant unicellular relatives. The main discovery of my PhD thesis was to reveal how the transition to multicellularity did not require massive gene innovation, but an extensive reuse of ancient genes. During that period I published 7 papers in top tier journals (PNAS, Nature Communications Mol Biol Evol), 5 as first author, 1 review, 1 comments and 1 book chapter. Both my master and PhD thesis were awarded an extraordinary prize by the University of Barcelona.

After my PhD, I stayed 10 months at the laboratory of Prof. Ruiz-Trillo at the Institute of Evolutionary Biology (CSIC-UPF) as a postdoctoral researcher. During that stage I completed two projects, one on convergent evolution in opisthokonts published in Current Biology (co-first author) and another on the genome and transcriptome of *Creolimax fragrantissima*, published in eLife (first and co-corresponding author).

My track record allowed me to obtain the highly competitive EMBO long term fellowship to conduct postdoctoral studies at Prof. Ryan Lister laboratory at The University of Western Australia. During 4 years, I have studied the evolution and functions of DNA methylation in distinct systems. One of my main findings was to discover how several transposable elements have obtained DNA methyl-transferases from their hosts for their own advantage (Nature Communications, first and corresponding author). Furthermore, I have conducted research on induced pluripotent stem cells, epigenome engineering and neural epigenomics. Preliminary data from my neural epigenomic projects led me to obtain my own funding for a competitive collaborative research grant. Moreover, I am a co-supervisor of a PhD student at the University of Western Australia.

My numerous participations at meetings (3 invited talks, 4 contributed talks, 6 posters), including roles as seminar and symposia organiser, have been recognised in national and international prizes (Walter Fitch travel award, EMBO best poster prize, Premi Prevosti).

Therefore, I am confident that my solid trajectory and proven maturity as an independent researcher has prepared me to lead a productive research group as a Ramon y Cajal fellow.

Resumen del Currículum Vitae:

Education

2014 PhD in Genetics (extraordinary prize). University of Barcelona, Barcelona, Spain.

2010 M.Sc. in Developmental Biology and Genetics (extraordinary prize). University of Barcelona, Barcelona, Spain.

2009 B.Sc. in Biological sciences. University of Barcelona, Barcelona, Spain.

Academic positions

Dec. 2016 - present. The University of Western Australia, Perth, Australia. Research associate. Advisor: Prof. Ryan Lister.

Dec. 2014 - Nov. 2016. The University of Western Australia, Perth, Australia. EMBO post-doctoral long-term fellowship. Advisor: Prof. Ryan Lister.

Jan. 2014 - Nov. 2014. Evolutionary Biology Institute, CSIC-UPF, Barcelona, Spain. European Research Council funded post-doctoral researcher. Advisor: Prof. Iñaki Ruiz-Trillo.

Sept. 2009 - Jan. 2014. University of Barcelona/Evolutionary Biology Institute, Barcelona, Spain. PhD Student. Advisor: Prof. Iñaki Ruiz-Trillo.

Sept. 2008 - Jun. 2009. University of Barcelona/Evolutionary Biology Institute, Barcelona, Spain. Undergrad intern student. Advisor: Prof. Iñaki Ruiz-Trillo.

Publications

18 publications (14 articles, 1 review, 2 comments, 1 book chapter), 13 as first/co-first author (including PNAS, Current Biology, Mol. Biol. Evol.), 4 as co-corresponding author (including Nature Communications, eLife).



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Additionally, I am an author in a preprint (Bioarxiv) and a science communication article (Investigacion y Ciencia)

Participation in I+D+i projects

I have worked in 9 funded projects, including 2 Spanish projects (national), 2 European Research Council projects and 4 Australian projects (international projects).

Fellowships and funding

2018 UWA Research Collaboration Award - (13.472)

2014 EMBO Long-Term Fellowship (ALTF 144-2014) - (87.305)

2009 FPI PhD Fellowship Spanish Ministry of Science.

2009 AGAUR Undergrad fellowship.

Graduate student supervision

PhD co-supervisor: Dulce Vargas-Landín, The University of Western Australia.

Contributions to scientific meetings and invited talks

3 Invited Talks.

13 contributions (6 posters and 7 oral contributions) in 12 national and international meetings.

Referee Work

I have been a reviewer in 16 occasions for 11 journals: Nature Communications, Nature Plants, Proceedings of the Royal Society B, Molecular Biology and Evolution, Genome Biology and Evolution, Scientific Reports, Plos ONE, Marine Genomics, Frontiers in Zoology, BMC Evolutionary Biology and Integrative and Comparative Biology.

Awards

Extraordinary prize for PhD and Master thesis awarded by the University of Barcelona.

Walter Fitch Travel Award (SMBE annual meeting 2014, Puerto Rico)

Holtz-Conner Travel Award (ICOP XIV 2014, Canada)

Prevosti Prize - Best Talk (XIII Jornades de Biologia Evolutiva, Spain)

Best poster prize (EMBO Comparative Genomics of Eukaryotic Microorganisms, Spain)



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Turno de acceso general

Nombre: BEJARANO FERNANDEZ, ELOY
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Área Temática: Biomedicina
Correo Electrónico: eloy.bejarano@tufts.edu

Título:

Aspectos moleculares asociados a envejecimiento y enfermedades asociadas: relacion entre autofagia, comunicacion intercelular y nutricion

Resumen de la Memoria:

My primary research interest is directed toward understanding the molecular basis behind the pathophysiology of age-related diseases, with an especial emphasis in the interplay between 2 cellular processes altered during aging: intercellular communication and proteolytic capacity.

During my PhD training, I acquired strong background in cellular biology with emphasis in the maintenance/function of organelles and later in cellular processes for degrading and recycling cellular components. Since 2008 I have been involved in the study of autophagy and the interactions with endocytosis under the mentoring of Dr. Ana Maria Cuervo. Once I completed the postdoctoral training program in Albert Einstein College of Medicine, I was promoted to Associate Junior Faculty in the Department of Developmental and Molecular Biology. In 2016 I was recruited as a Scientist-III by the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University.

I have produced several publications as a first author and corresponding author in major international scientific journals and participated in different collaborations. My work has been shown in international meetings. I have been invited speaker in prestigious research institutions in the States and Europe and ad hoc reviewer in top scientific journals. I have published 12 articles in some of the best peer-reviewed journals in the field, 7 first author and 2 corresponding author, with a H-index of 8 and cited a total of 7591 times. I have recently been honored to receive the prestigious Vernon R. Young International Award and get funding for a pilot project from the United States Department of Agriculture.

Overall, my contributions has helped to advance our understanding in two major topics: 1) biogenesis and stability of subcellular organelles (Golgi, plasma membrane and autophagic compartments) and 2) molecular dissection of selective mammalian autophagy in normal and pathological conditions (nutritional stress, oxidative stress and aging).

The major discoveries have occurred at the following levels: 1) Signaling, stability and biogenesis of subcellular organelles, 2) Proteolytic pathways in the maintenance of intercellular communication, 3) Molecular dissection of mammalian autophagy, 4) Autophagy and neurodegeneration and 5) Autophagy during nutritional stress, oxidative stress and aging.

In summary, I have become a multidisciplinary scientist with a solid background in molecular and cellular biology with emphasis in the characterization of the molecular mechanisms involved in the modulation of the turnover of organelles/proteins and the understanding of the contribution of their malfunctioning on cellular damage and proteotoxicity. I have devoted more than a decade to acquiring a broad range of methodological skills in the fields of aging, membrane traffic and protein degradation and gaining a strong background in experimental systems and in vivo an in vitro procedures to analyze endocytic and autophagic pathways in normal and pathological aging.

Resumen del Currículum Vitae:

EDUCATION

University of Seville, Spain / B.Sc./ 09/2002 / Molecular and Cellular Biology
University of Seville, Spain / M.Sc. / 06/2004 / Molecular and Cellular Biology
International University of Andalucía, Spain / Master / 10/2005 / Computational Biology
University of Seville, Spain / Ph.D. / 10/2007 / Molecular and Cellular Biology
Albert Einstein College of Medicine, NY, USA / Postdoctoral Training/ 02/2013 / Cellular Biology and Aging

POSITIONS AND HONORS

Positions and Employment

2003-2007 Pre-doctoral Fellow, Dept. Cell Biology, University of Seville, Spain



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2007-2008 France	Post-doctoral Fellow (Research Associate), Dept. of Subcellular Structure and Cellular Dynamics, Institute Curie, Paris, France
2009-2013	Research Fellow, Depts. of Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY
2013-2015	Research Associate (Junior Faculty), Depts. of Developmental and Molecular Biology, Albert Einstein College of Medicine, Bronx, NY
2008-2015	Member of the Marion Bessin Liver Research Center, Albert Einstein College of Medicine, Bronx, NY
2008-2015	Member of the Institute for Aging Research, Albert Einstein College of Medicine, Bronx, NY
2016-2017	Member of Junior Faculty Research Career Development Forum Tufts CTSI
2016-present	Scientist III, Laboratory for Nutrition and Vision Research, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA

Honors and Awards

2002	Research Fellowship for Outstanding Undergraduate Students, Spanish Ministry of Education and Science, Seville, Spain
2003-2007	Research Fellowship for PhD students, Spanish Ministry of Education and Science, Seville, Spain
2008	EMBO Short-term Fellowship, Subcellular Structure and Cellular Dynamics, Institute Curie, Paris, France
2015	Fellowship for NIA Training Course in Experimental Aging Research, Buck Institute for Research on Aging, Novato, CA
2016	Marie Skłodowska Curie Individual Fellowship - Reintegration Grant (declined)
2018	ASN Vernon Young International Award

Other Experience and Professional Memberships

2005-2007	Teaching Assistant. Dept. of Cellular Biology. University of Seville. Spain
2011-present	Ad hoc reviewer in prestigious journals (Autophagy, Aging Cell, Journal of Gerontology, PLOS ONE)

Invited Presentations

07/2014	Department of Surgery, Division of Surgical Oncology, The Ohio State University Wexner Medical Center
10/2014 Antonio	The Sam and Ann Barshop Institute for Longevity and Aging Studies, University of Texas Health Science Center at San Antonio
02/2015	Department of Biology, Drexel University College of Arts and Sciences
04/2015	Ramón y Cajal Institute for Biomedical Research, Madrid, Spain
07/2015	Department of Physiology and Biophysics, Stony Brook University
08/2015	Department of Psychiatry, Icahn School of Medicine at Mount Sinai
10/2015	Graduate College of Biomedical Sciences, Western University of Health Sciences
11/2015	Laboratory for Nutrition and (HNRC-Tufts University)



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2018

Turno de acceso general

Nombre: CASAR MARTINEZ, BERTA
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Área Temática: Biomedicina
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Título:

Estudio de los mecanismos moleculares que regulan la metastasis del melanoma. Implicaciones terapéuticas y búsqueda de nuevos Biomarcadores.

Resumen de la Memoria:

I am a scientist with 15 years background of specialised research in Cancer. The basis of my research stems from the hypothesis that Ras-ERK pathway deregulation impacts on biological processes frequently altered in cancer.

During my pre-doctoral training, awarded by FPU programme, I was interested in the function of Mxi2 regulating ERK phosphorylation to promote proliferation and survival of cancer cells. These studies motivated me to focus my research in the field of tumorigenesis and the biological consequences of RAS-ERK pathway mutations.

I moved to The SCRIPPS Research Institute (CA, USA) as postdoctoral researcher, awarded by Fundación Ramon Areces and Ministerio de Ciencia, where I studied tumor formation and metastasis of cancer cells. There, I learned new in vivo models to study colonization of tumor cells and I described a monoclonal antibody as a new treatment for prostate cancer.

With the aim to take a path towards my independence, I was later on recruited as a JAE -DOC postdoctoral researcher at IBBTEC. Here, I developed my own project and we described DEL 22379 as a new compound that inhibit ERK dimerization and is unaffected by resistance mechanisms that hamper classical RAS-ERK pathway inhibitors. In 2015, I got a grant from Fundación Francisco Cobos to continue my research about ERK activation depending on Ras cellular sublocalization.

Since 2017, as an independent PI belonging to the Cancer Signalling Group-IBBTEC, I lead a 2- people-team and my current research lines are to study the processes that regulate metastasis and to develop new therapies to block dissemination of tumor cells. Here at the IBBTEC I have develop two new animals models the chick embryo metastasis and mouse ear model model to analyze dissemination of tumor cells and pre-clinical screening to assess the efficacy of drugs and inhibitors blocking metastasis. I am an expert in live imaging in animals models to study intravasation of melanoma cells

Overall, at this early stage of my career I have a remarkable publication record with a total of 20 articles (10 first author), 2 articles as a corresponding author, and 2 additional articles that are under revision. My work has 524 citations and has been presented in 8 international meetings (4 as selected-speaker) and 12 national meetings. As a proof of the relevance and recognition of my research lines, I have participated in 10 national&international projects and invited speaker by 2 research institutions. I have supervised undergraduate and master students and I am co-director of the thesis of 3 PhD students.

My experience as investigator in my own project SAF-2015 73364-JIN has helped me to consolidate as a PI, to successfully develop the leadership of a research project, with personnel hired under my charge, and staff in training under my co-direction of TFG, TFM and Doctoral Thesis. Without forgetting that during this period I have developed teaching activity, in perfect rapport with the leadership of the project, and the management of the laboratory, to the extent that allows the execution of the project.

Overall, my combined years in national and international laboratories has given me a broad knowledge of different techniques, animal and cellular models, grant writing, manuscript preparation and student training and has provided me with the skills necessary to success as a RYC researcher.

Resumen del Currículum Vitae:

I am a scientist with dedicated training and work of 15 years to cancer research and one central question has driven my career: how does signalling pathways regulate tumorigenesis and metastasis in cancer?

During my pre-doctoral training at the Universidad de Cantabria (Spain), my work in the field of Ras/ERK signalling activation in tumor cells were published in 5 articles (first author in EMBO J and Molecular Cell) and presented in 4 international meetings. After defending my PhD, in 2012 I was awarded with the prestigious Ramon Areces Foundation grant and I joined The Scripps Research Institute (San Diego, USA) to develop a project in which I was co- PI. As first author, I published my work in two papers in Oncogene, presented it in two international meetings and I was invited as speaker in 2 national congress. I successfully obtained competitive funding as postdoctoral research from Ministerio de Ciencia. In 2011, I joined IBBTEC (Spain) and developed my own projects that have been the biggest achievements of my career and were published in 4 first-author research & review articles in journals such as Cancer Cell I was first author in a scientific article, published in Nature Communications. I was awarded with Poster Prize at FEBS meeting . I mentored younger scientist and co-direct the thesis of a three PhD student.

Since January 2017, I am an independent PI belonging to the Cancer Signalling at the IBBTEC. I lead a team formed by one PhD student (the first I co-direct), and one technician. I successfully got funding as PI from 2 public agencies. I am first author in a review article and corresponding author in three scientific articles (one recently submitted). As a result of my co-working spirit and the establishment of highly-productive collaborations I have been co-author in four research articles published in Cancer Cell , Nature Communications, Molecular Cell, Oncogene, EMBOJ, and two additional ones that are submitted or under review in Scientific Reports , and European Respiratory Journal.



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Overall, I have a very good publication record with a total of 20 primary research papers, 2 reviews and 2 additional papers that are submitted or under review (one as a corresponding author). Among my publication record, I am first author in 10 of them and corresponding author in two. My work has been presented in 12 international meetings, I have been invited to present my work in 2 international institutions. I am co-director of the thesis of three PhD students, obtained funding as PI for 2 projects and lead a 2-people-team.

Moreover, I combine my research with my teaching activity at the University of Cantabria, I am a professor of Biochemistry in the Degree of Physiotherapy (Gimbernat-UC) and in the Master of Molecular Biology and Biomedicine (UC). This year I have been accredited by the ANECA as Profesor Contratado Doctor in the public and private University. I am also an evaluator of the ANEP of Research Projects and reviewer of the JOVE protocol magazine. I have also developed an intense science dissemination activity and I have participated in different editions of Women in Science Day and Week of Science.

Since 2017, I am an independent PI funded by a JIN- MINECO program focus on the altered signalling pathways during cancer progression and committed to teaching and scientific dissemination.



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Turno de acceso general

Nombre: RIZZELLO , LORIS
Referencia: RYC2018-024211-I
Área Temática: Biomedicina
Correo Electrónico: lorisrizzello@gmail.com

Título:

Pandemics Outbreaks Rationalized: towards a universal therapy to eliminate intracellular pathogens and drug resistance

Resumen de la Memoria:

I propose here a research vision that aims to revolutionize the way we cure infections caused by intracellular pathogens, with the aim to find a universal therapy to infectious diseases that will also counteract the development of drug resistance. In PANDORA, I will specifically focus on eradicating human tuberculosis, one of the worst pandemics so far. To do this, I will first probe what are the molecular barcodes of infected cells, namely those specific membrane proteins that cells express upon infection. I will use this to reversely engineer a repertoire of super-selective polymeric nanoparticles - known as Polymersomes - that will carry ligands to recognize, bind, and selectively attack infected cells only, while leaving non-infected cells completely untouched. Such nanocarriers will access the infected cells and locally deliver their payload, which is the core technology of the therapy. Such technology will be inspired by what nature invented: I will reproduce the binding sequence of autolysins, proteins expressed by bacteriophages that specifically bind the wall of Mycobacteria species (the agent causing tuberculosis). I will thus create fusion antibodies (Ab) characterized by (i) the binding sequence of mycobacteriophages autolysins (for selective recognizing intracellular Mycobacterial wall) and (ii) an effector region promoting bacterial clearance through either the macrophage-triggered phagocytosis or an ubiquitin-proteasome system. This therapy will represent a complete revolution in the field of new antimicrobial development, as it will combine complete bacterial eradication, development of memory immunity and fight against drug resistance, the three core pillars of this project.

Resumen del Currículum Vitae:

I am a Marie Curie Fellow (since October 2018) at the Institute for Bioengineering of Catalonia (IBEC), working on the development of organoids to model infection diseases. I have also a visiting honorary researcher position at the Department of Chemistry, University College London (UCL).

From January 2016 to September 2018 I was a senior researcher at UCL, group leader of the biology team of my lab. Here I have also been working in a joint contract with the BTG plc company, where I developed polymersomes for cancer immunology. From January 2014 to December 2015 I was an International Newton Fellow (the Royal Society), working in the development of polymeric nanoparticles to fight tuberculosis.

Earlier (from 2012 to 2013), I was a junior postdoc at the Italian Institute of Technology, working in the field of nanotechnology tools for designing antibacterial materials.

In my PhD (joint experience between the University of Salento and the Italian Institute of Technology), I have explored how surface nanostructures impact living systems with nanometer sensitivity.

I have received both Summa cum Laude Master and Bachelor degrees in Biotechnology, in 2008 and 2006 respectively.

I received the Villa Nazareth foundation prize to fund all my 5 years of University studies, and the ISUFI award (Scuola Superiore ISUFI), which is the school of excellence of my University. After the PhD, I obtained my first independent fellowship, The Lady Davis Fellowship Trust (2013) at the Hebrew University of Jerusalem, and the prestigious Newton International Fellowship from the Royal Society (2014). I have been funded with an EMBO fellowship (2017) that allowed me to visit the laboratories of Prof. Tabet Teesalu (University of Tartu, Estonia). I have now just started my Marie Curie IF fellowship (2018).

In terms of academic achievements, I have produced 21 articles, 3 book chapters, and invited as speaker in several international conferences worldwide. My works were published in top journals such as ChemSocRev (Impact Factor 40), PNAS (IF 9.5), ACSNano (IF 13.7), and Nanoscale (IF 7.2), as well as in other journals. My works have been cited 1225 times, and I currently have an h-index of 14. In addition, I am the owner of 5 patents, a topic confirming my transferable skills in the industry sector.

I regularly serve as a reviewer for Scientific Reports, Biomaterials, European Journal of Nanomedicine (EJNM), Journal of Translational Medicine; Sensors & Actuators B, Coatings, as well as I am member of the scientific committee of the Flemish Research Council FWO. I am also Editorial Member for the journal: Int. J. of Canc. Sci. Res.

I lecture Microbiology and infection, Host-pathogens interactions, Nanotechnology tools for infection treatments, and scanning the new drug horizons. These are all modules of the Infection and Immunity Department at UCL.



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I have an extended network of national and international collaborators including: Dr. Prof. Mario Raviglione (WHO, and University of Milan), Prof. T. McHugh (UCL, UK), Dr. B. De Geest (University of Ghent, Belgium), Prof. Giuseppe Battaglia (UCL, UK), Dr. S. Yona (UCL, UK), Dr. P. Elks (University of Sheffield, UK), Dr. A. Galeone (Baylor College of Medicine, US)



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Turno de acceso general

Nombre: SANCHEZ NIÑO, MARIA DOLORES
Referencia: RYC2018-024461-I
Área Temática: Biomedicina
Correo Electrónico: loli_san@yahoo.es

Título:

Identification of new therapeutic targets in kidney disease

Resumen de la Memoria:

I am a biologist interested in the pathogenesis of kidney disease to develop new therapeutic approaches. Chronic kidney disease is the second fastest growing cause of death in Spain, after Alzheimer.

My trajectory is divided in 3 stages.

1. PhD student, funded by a FPI fellowship (Spanish Ministry of Science and Technology), I completed my doctoral thesis (Suma Cum Laude) at Autonomía University of Madrid under the supervision of Prof. Alberto Ortiz. My PhD focused on novel molecular mechanisms of podocyte injury in diabetic nephropathy (DN). I did a research stage in Medizinische Poliklinik (Munich, 3 months, Prof. M Kretzler). My work led to 3 publications in the best journal of the category (Sanz AB JASN 2008, Sanchez-Niño MD JASN 2009 and 2010) and 8 reviews. Overall, I co-authored 7 publications (2 as first author), 13 reviews and 1 book chapter.

2. Junior Post-Doctoral researcher. In 2011 I joined Prof. F Batista group (Cancer Research UK, London) as a postdoctoral researcher. I investigated how the location of splenic NKT cells favors their activation by blood-borne antigens (EMBO J 2012). In 2013 I started the Sara Borrell program at IdiPAZ where I identified novel mediators and therapeutic targets in kidney injury. In 2014 I moved to the U. of Michigan (Prof. G Nuñez) where I studied the role of microbiota-related molecules in kidney disease. This stage led to 17 publications: 6 as first author (1 as corresponding: Arch Toxicol 2014), 18 reviews (2 as corresponding) and 3 book chapters. I participated in 15 international meetings (in 3 as invited speaker).

3. Group leader. In 2015 I became a Miguel Servet group leader. Over the past 4 years, I have built a team and developed a research program that applies systems biology tools to study the molecular mechanisms of kidney disease and to identify new therapeutic targets and biomarkers, mainly in DN, Fabry disease and acute kidney injury from a fully translational point of view: A RCT was based on my research in the cytokine TWEAK and a clinical guideline on Fabry disease cites my work to make therapy recommendations and I collaborate with the GBD initiative. We have achieved: 1) a proven track record with a total of 47 publications (11 of them as corresponding author), 2) successfully established national and international research collaborations, 3) attracted significant funding as an independent researcher from several sources [FIS PI15 and PI18, Spanish Society of Nephrology (2015, 2018), Spanish Society of Diabetes (2018), Mehuer (2016, 2018), Sanofi-Genzyme among others] amounting to over 780000 Euros. I have participated in several competitive research projects funded by both national and international agencies (EU ADDNET, EU PRIORITY, FP7-PEOPLE-2013-ITN, EraPerMed), and 4) 6 patents and 1 patent application on novel therapies for kidney disease.

I was a Visiting Investigator at Mount Sinai hospital, NY (2017, Prof RJ Desnick). I have directed 6 PhD thesis, 3 master students, 3 undergraduate students and received 3 international PhD students (Cardiff Univ, Brasil and Argentina). I am now supervising 4 PhD students. During this period, I completed a Master in Bioinformatics (2015) and took a career break for maternity leave for 6 m. I have received the Basic Research Award in Nephrology (Iñigo Alvarez de Toledo Renal Foundation). The most prestigious Spanish Nephrology award

Resumen del Currículum Vitae:

Studies

MSc Bioinformatics, ISCIII, 2015

PhD UAM, 2009

BSc Biology, 2002

Maternity leave 2018, 6 mo

Researcher

2015- Miguel Servet, ISCIII

2013-14 Sara Borrell, IdiPAZ, Madrid

2009-10 Postdoctoral, REDINREN, Madrid

2004-08 PhD Student (FPI fellowship Spanish Ministry of Science & Technology)

International stays

2017 Visiting Investigator. Mount Sinai, New York. Advisor RJ Desnick

2014 Postdoc. Michigan U. Advisor G Nuñez

2011-2012 Postdoc. Cancer Research UK, London. Advisor F Batista

2005 PhD Student. Medizinische Poliklinik. Munich, Germany. Advisor M Kretzler



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International research consortia

EUtox: European uremic toxin study group, Working Group, European Renal association ERA-EDTA

GBD: Global Burden of Disease

Scientific contributions

h-index: 33/38 (WOS/Google Scholar)

h-10 index: 75/88 (WOS/GS)

Citations: 7233/8613 (WOS/GS)

Accumulated impact factor: 4502

Publications: 148, including Lancet (x21) IF:53, N Engl J Med (x2) IF:79, Lancet Diabet Endocrinol (x1) IF 19, Diabetes Care (x1) IF 13.4, Nat Rev Nephrol (x1) IF 12.1, EMBO J (x1) IF 10.5, PNAS (x1) IF 9.5, JASN (x10) IF:8.9, Kidney Int (x6) IF 8.4

1st author :28

Corresp. Author: 17

Book chapters: 6

Patents: 6, 1 application

Projects, PI 12 (>780,000 Euros): 4 public competitive (ISCIII CP14/00133, PI15/00298, PI18/01366, FIPSE), 7 private competitive, 1 private international. Associated investigator: 18 (including European projects UE AddNet, PRIORITY, iMODE-CKD ITN, EraPerMed)

Supervised PhD Thesis completed: 6

Invited conferences: 11 (International)/4 (National)

Awards

2017 XXIX Basic Research Award in Nephrology (Iñigo Alvarez de Toledo Renal Foundation). The most prestigious Spanish Nephrology award

2016 Dr Nesmo Yeyati Award, best work in basic research in nephrology (Argentina)

2015 IDC-Health Research Award Dr. Hernando Avendaño

2013 Best Poster Award, 3rd Update on Fabry Nephropathy, Hong Kong

2012 XXII Basic Research Award in Nephrology JANSSEN-CILAG

2011 Translational Medicine Award, Fundacion Hospital Madrid

2010 XX Clinical Research Award in Nephrology JANSSEN-CILAG

2009 Research Prize in Lysosomal Diseases, 6 National FEEL Symposium, Seville

2009 Extraordinary PhD Award in Basic Research, Jimenez Diaz Foundation

International recognition

Expertscape (<http://expertscape.com/>; accessed December 2018) ranking based on 10-y publication record:

#1 Spain #26 Europe, topic Diabetic nephropathies

#1 Spain #25 Europe, Acute kidney injury

#2 Spain #14 Europe, Kidney

#2 Spain #34 Europe, Kidney diseases

#3 Spain Fabry disease

#4 Spain Chronic kidney insufficiency

Rank by citations by topic, international scientists in Goggle Scholar:

#2 Fabry disease

#2 Diabetic kidney disease

#10 Acute kidney injury

#64 Nephrology

2018 keypointer at European Association for the Study of Diabetes congress in Berlin

Peer reviewer

Projects: French National Research Agency (ANR) and National Agency for Scientific and Technological Promotion (ANPCT, Argentina)

Journals: EMBO Mol Med, JASN, Kidney Int, Nephrol Dial Transplantation, Neoplasia, Plos One, Inflammation Research, Redox Biol

Editorial Activities

2018-2019 Guest Editor, Nutrients, Q1

Additional teaching activities

Co-director, MOOC on Renal Pathophysiology, UAMx at EDX; 4000 students/year

Faculty, summer course, Phosphate and Kidney Disease, UAM, 2014

Clinical collaborator, Dpt of Medicine, School of Medicine UAM 2017-9

Supervisor, Master thesis 3;



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Turno de acceso general

Nombre: CASANOVA MARCOS, JORGE
Referencia: RYC2018-025197-I
Área Temática: Ciencias físicas
Correo Electrónico: jcasanovamar@gmail.com

Título:

Quantum technologies for quantum sensing and quantum information processing

Resumen de la Memoria:

I am an Ikerbasque Research Fellow, who has previously worked at University of Ulm (Germany) in the group of Prof. Martin Plenio, and at University of the Basque (Spain) in the group of Prof. Enrique Solano. During my career I have received several national and international prizes and research grants that have supported my scientific activities. Among them I can mention, for example, the Ikerbasque research fellowship, the Humboldt research fellowship, and the Juan de la Cierva (Incorporación) research fellowship.

I have more than 9 years of research experience in the burgeoning field of quantum technologies. In particular, I have developed research in several disciplines such as quantum simulations, quantum algorithms, light-matter interaction, and nanoscale nuclear magnetic resonance. Furthermore, although I am a theoretician, I have a strong knowledge in the technical details of different quantum platforms including laser-based and microwave-based trapped ions, and solid-state technologies such as nitrogen vacancy centers in diamond.

I am a highly motivated researcher with several relevant contributions in prestigious journals, see CV.

I have experience leading research teams at University of the Basque Country (Spain) and University of Ulm (Germany). The latter is certified since University of Ulm granted me with a research price to invest in the research activities of my research subgroup.

I have a wide international research network including theoretician and experimental researchers in, so far, 14 different institutions worldwide. These are, University of Siegen (Siegen, Germany), Institute of Theoretical Physics (Ulm, Germany), Institute for Quantum Optics (Ulm, Germany), IFF CSIC (Madrid, Spain), University College London (London, UK), Walther-Meisner institute (Garching, Germany), Max-Planck Institute for Quantum Optics (Garching, Germany), Center for Quantum Photonics (CQP) (Bristol, UK), Institute for Quantum Optics and Quantum Information (Innsbruck, Austria), Harvard University (Cambridge, USA), Shanghai University (Shanghai, China), Tsinghua University (Beijing, China), Macquarie University (Sydney, Australia), Queensland University (Brisbane, Australia).

Furthermore, I have a strong experimental influence in a variety of implementations, up to 13, in different quantum platforms, while I have directly participated in 4 of these experiments.

Resumen del Currículum Vitae:

I am an Ikerbasque research fellow working at University of the Basque Country, Bilbao, Spain. I have published 45 articles, and submitted several others (see full list of publications in my CV or in my arXiv for further updates). This list includes, among others, 3 Nature Communications, 1 npj Quantum Information (nature partner journal), 1 Physical Review X, 2 Scientific Reports, 14 Physical Review Letters (one of them Editor's Suggestion), 2 Physical Review Applied, 1 Physical Review B, 11 Physical Review A (including 2 Rapid Communications), and 3 New Journal of Physics. In addition, these works have been highly cited with a number of citations > 1500 and a h index of 19 (according to Google Scholar).

My research work has received a strong experimental interest influencing a variety of implementations, up to 13, in different quantum platforms, while I have directly participated in 4 of these experiments. I have 4 invited talks at international conferences, 7 contributed talks, and more than 10 invited seminars at different academic institutions in distinct countries. During my career I have received different research prizes, and been awarded with several national and international research grants. Hence, another aspect to remark in my scientific profile is my capacity to attract scientific funding from national and international funding agencies. I have also contributed with the formation of a number of Ph.D. students, always in cooperation with each host group leader at Universities of Ulm (Germany) and the Basque Country (Spain). In addition, at University of Ulm I was leading a subgroup composed, besides me, of one postdoc and two Ph.D. students. This initiative was further recognized in November 2016 by University of Ulm that granted me with a Forschungsbonus (research price) to be invested in the research activities of my team. The latter certifies my ability to manage scientific funding and human resources for science. Furthermore, at University of Ulm I have carried out teaching activities in the course Advance Quantum Mechanics for undergraduate students.

Currently, I actively perform research in quantum sensing and quantum information by designing protocols to be implemented in quantum platforms as nitrogen vacancy centers and hyperfine trapped ions. More precisely, my research in quantum sensing is focused on the development of methods to achieve magnetic resonance imaging at the single molecule level for applications in chemistry and medicine. Regarding information processing, I work in the implementation of fast and robust quantum gates in trapped ions that operate at the



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microwave regime in atoms such as Beryllium and Magnesium. This kind of atoms exhibits, in addition, large decay times representing exceptional quantum registers for a scalable quantum computer or simulator. Additionally, I also keep track, with recent key contributions, of two of my pioneering research lines in the last years: relativistic quantum simulations and the deep strong coupling regime of light-matter interactions. Overall, my interdisciplinary research lines can be cast in the frame of the burgeoning field of quantum technologies.



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Nombre: PLATERO PRATS, ANA EVA
Referencia: RYC2018-024328-I
Área Temática: Ciencias y tecnologías químicas
Correo Electrónico: ana.platero@uam.es

Título:

Structurally-driven development of porous nanomaterials for energy and environmental applications

Resumen de la Memoria:

The scientific career of Ana E. Platero-Prats is focused on the "structurally-driven" development of porous crystalline materials and the use of advanced synchrotron characterization tools, covering topics as diverse as catalysis, separation, and environmental clean-up. During her PhD period (2008-2011), she worked on the synthesis and characterization of novel alkaline-earth metal-organic framework (MOF) materials, and the evaluation of their catalytic and separation properties (total number of publications = 8 (1 J.Am.Chem.Soc.), 1 review (Adv. Mater.), 1 international patent). During her PhD, Platero-Prats spent three months in the group of Prof. G. Férey (CNRS, France) working on preparation of MOF thin-film for nanodevices and one month with Prof. D. M. Proserpio (Università degli Studi di Milano, Italy) to train herself on crystal topological methods.

The exposure to different projects and scientific cultures during her PhD gave her a strong background in various subdisciplines of materials chemistry, and the use of crystallographic methods for structural characterization, which motivated her to explore other research areas during her postdoctoral formation. In 2012, she joined the group of Prof. Zou at Stockholm University (SU) in Sweden, to work on the catalytic application of porous nanomaterials. This postdoctoral period was the first step to expand and internationalize her network in Europe. Her research activities at SU were done within the context of the Berzelii Center EXSELENT on Porous Materials and the Consortium of Crystal Chemistry (C3), in an alliance with the synchrotron PETRA III in Germany (total number of publications = 11 (1 J.Am.Chem.Soc.)).

In October 2014, Platero-Prats joined the Argonne National Laboratory in USA. Her motivation to work with Prof. Chapman at the Advanced Photon Source (APS), world-class expert in Pair Distribution Function (PDF) analyses, was a natural consequence of her curiosity about complex structural aspects on materials. The research activities of Platero-Prats were done within the context of an Energy Frontiers Research Center funded by the US Department of Energy. During her period at ANL, Platero-Prats trained herself in advanced X-ray scattering tools (still quite underexplored in Europe) to explore the local structure of catalytic materials under conditions relevant for synthesis and catalysis. She led more than 15 allocated beamtime projects and published 23 articles (7 J. Am. Chem. Soc., 1 ACS Cent. Sci., 1 Angewandte Chemie).

In November 2017, Platero-Prats was awarded with a InterTalentum-MSCA grant and joined the Universidad Autónoma de Madrid motivated by the desire of establish an independent career in Europe. In April 2018, she accepted a prestigious Talent-CM grant to start her own research group. Platero-Prats is currently leading a young research team composed of 1 postdoc (funded by European Social Funds and CM), 1 PhD (funded by Talent-CM) and 1 undergraduate student. The goal of her research is not only to establish the use of advanced synchrotron X-ray characterization tools in the Spanish research community to tackle main current challenges in chemical and materials sciences, but to combine them with the knowledge acquired during her PhD and postdoctoral formation.

Resumen del Currículum Vitae:

Since 2018, Ana E. Platero-Prats is junior group leader at the Universidad Autónoma de Madrid (UAM), with support from the Comunidad de Madrid through a prestigious Talent-CM grant. Her research blends materials and chemical sciences with the use of advanced synchrotron X-ray characterization tools, to come up with a more realistic structural understanding of catalytic and adsorption processes on porous nanomaterials. Platero-Prats has over a decade of experience in development of metal-organic frameworks and the use of atomic-precision structural characterization techniques. Her group currently consists of 1 postdoc, 1 PhD student and 1 undergraduate.

Platero-Prats obtained her MSc in Crystallography and Crystallization in 2009 and her PhD in Chemistry with distinction from UAM ("Premio Extraordinario de Doctorado" and award from Real Sociedad Española de Química) in 2011. She developed her PhD work at Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC), under supervision of Prof. Gutiérrez-Puebla. She spent three months at Institute Lavoisier de Versailles (CNRS) in France in the group of Prof. G. Férey, and one month in Università degli Studi di Milano in Italy with Prof. D. M. Proserpio. In 2012 Platero-Prats joined the group of Prof. X. Zou at Stockholm University (Sweden) as postdoctoral researcher within the Berzelii Center EXSELENT on Porous Materials. In 2014, she moved to the Argonne National Laboratory (USA) as Beatriu de Pinós fellow. Her research activities in this period were done in the context of an Energy Frontiers Research Center funded by the US Department of Energy. In November 2017, Platero-Prats was awarded with an InterTalentum MSCA-grant to join the laboratory lead by Prof. F. Zamora at the UAM. In April 2018, she accepted a prestigious Talent-CM grant to start her independent research career.

Platero-Prats is (co-)author of 51 articles, the majority of which in major and multidisciplinary journals (e.g. J. Am. Chem. Soc. (11)



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(including one as a corresponding author), ACS Cent. Sci. (1), Angewandte Chemie (1), Chem. Commun. (2)). Her work has received >2400 citations, h-index = 22 (Google Scholar). She holds an international patent and have given four invited talks in international conferences and workshops, one as a plenary lecture. Currently, co-directing two PhD theses and tutoring a postdoctoral researcher. Platero-Prats has also co-directed numerous MSc and BSc students during her work at SU (Sweden) and now in UAM.

She is recipient of various awards, most prominently: Xavier Solans Award-2018 from the Real Sociedad Española de Química y Física, and the Honourable Mention for Outstanding Postdoctoral Performance from the Argonne National Laboratory, USA; and grants: Talent-CM grant (310.000 EUR), InterTalentum-MSCA grant (144.000 EUR), and > 15 beamtime allocated proposals as main investigator. As PI, she has secured >480.000 EUR in funding.



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Turno de acceso general

Nombre: COCA VILA, IVO
Referencia: RYC2018-025174-I
Área Temática: Derecho
Correo Electrónico: ivo.coca@upf.edu

Título:

Conflicto y orden: Derecho penal, libertad ciudadana y poder económico.

Resumen de la Memoria:

1. Trayectoria Investigadora

Tras licenciarme en Derecho (8,6/10) en el año 2009 y cursar el Máster Oficial en Ciencias Jurídicas (9,6/10 Tesina: 10/10) en la UPF, obtuve en el año 2010 una Beca FPU. Tras efectuar un total de cinco estancias predoctorales en diferentes universidades alemanas, defendí con éxito en diciembre del año 2015 mi tesis, obteniendo además de la máxima calificación (Sobresaliente/Cum Laude), la Mención de Doctorado Internacional y el Premio Extraordinario de la Facultad de Derecho de la UPF. En octubre del año 2016 me incorporé como Asistente de Investigación en el prestigioso Instituto de Derecho Penal de la Universidad de Friburgo, dirigido por el Prof. Dr. h.c. mult. Michael Pawlik. En noviembre del año 2016, con apenas 29 años de edad, gané la Beca Postdoctoral de la Fundación Alexander von Humboldt, que comencé a disfrutar el 1 de julio del año 2017. Ésta, la más prestigiosa en el ámbito jurídico continental, me fue concedida por un plazo de 24 meses, el máximo contemplado por los estatutos de la Fundación. Tras ganar asimismo una plaza como Profesor Lector (Contratado Doctor) en el Departamento de Derecho de la UPF a principios del año 2018, e impartir tres meses de docencia en dicho Centro, retomé el 1 de enero del año 2019 mi Proyecto como Becario Humboldt en la Universidad de Friburgo.

2. Líneas de investigación principales desarrolladas

Dos son mis principales líneas de investigación desarrolladas: por un lado, me he dedicado al estudio de los fundamentos de atribución de la responsabilidad penal y, en particular, al análisis de las condiciones normativas bajo las cuales una persona puede desplazar el mal que le amenaza a un tercero (sistema de causas de justificación: legítima defensa, estado de necesidad, colisión de deberes). En esta primera línea, caracterizada por el rechazo de los planteamientos utilitaristas y el recurso a formas argumentales propias de la filosofía moral para abordar problemas dogmático-penales, se encuadran, además de mi tesis doctoral, una decena de trabajos en revistas de máximo prestigio en el ámbito jurídico-penal, tanto españolas, como alemanas y norteamericanas (Zeitschrift für die gesamte Strafrechtswissenschaft; Criminal Law and Philosophy; New Criminal Law Review, Anuario de Derecho Penal). Por el otro, me he concentrado en el estudio del Derecho penal económico, en particular, en el análisis del fenómeno de la autorregulación regulada (compliance), así como en el Derecho penal patrimonial y societario. En esta segunda línea se enmarcan, además de la publicación de la monografía referente en España sobre el delito de administración desleal, más de una docena de artículos publicados en revistas de enorme reputación en la comunidad de científicos del Derecho penal (Goldammer's Archiv für Strafrecht, InDret).

3. Línea de investigación presente

En la actualidad, en mi condición de Becario Humboldt, estoy escribiendo en la Universidad de Friburgo una monografía en la que propongo una revisión fundamental de la delimitación material entre el injusto administrativo y el penal. Mi objetivo es, valiéndome de la discusión decimonónica alemana sobre el injusto de policía, ofrecer al legislador contemporáneo modelos útiles (tipos paradigmáticos) de injusto penal y administrativo a fin de contribuir a la más racional de las legislaciones posibles.

Resumen del Currículum Vitae:

1. Formación académica

2015: Doctor en Derecho por la Universidad Pompeu Fabra (UPF) Excelente/Cum Laude Mención Doctorado Internacional Premio Extraordinario de Doctorado.
2011: Máster Oficial en Ciencias Jurídicas (UPF) 9,6/10 - Tesina: 10/10.
2009: Licenciado en Derecho (UPF) 8,6/10.

2. Cargos académicos y becas

Desde 2019: Becario de la Fundación Alexander von Humboldt (Albert-Ludwigs-Universität Freiburg).
2018-2019: Profesor Lector / Profesor Contratado Doctor (UPF).
2017-2018: Becario de la Fundación Alexander von Humboldt (Albert-Ludwigs-Universität Freiburg).
2016-2017: Asistente posdoctoral de Investigación (Albert-Ludwigs-Universität Freiburg).
2016-2016: Profesor visitante (UPF).



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2014-2016: Becario predoctoral PIF (UPF).
2011-2011: Becario predoctoral DAAD (Albert-Ludwigs-Universität Freiburg).
2010-2014: Becario predoctoral FPU (UPF).
2009-2010: Becario de asistencia a la docencia en Posgrado (UPF).
2008-2009: Becario de asistencia a la docencia en Grado (UPF).

3. Proyectos de Investigación financiados

Investigador principal en: 1 proyecto financiado por la Alexander von Humboldt Stiftung (70.000 €); Asesor Científico en: 2 proyectos internacionales financiados por la Universidad de Buenos Aires (UBACYT); Coordinador en: 1 proyecto internacional financiado por la Alexander von Humboldt Stiftung (60.000 €); y Miembro Investigador en: 3 proyectos financiados por el Ministerio de Ciencia, Innovación y Universidades del Gobierno de España (190.570 €); y 1 proyecto financiado por la Generalitat de Cataluña (22.540 €).

4. Estancias de investigación en Centros Extranjeros

9 estancias de investigación en el extranjero (2 como Becario de la Fundación Alexander von Humboldt; 1 posdoctoral como Asistente de Investigación contratado; 1 posdoctoral como invitado; 5 predoctorales).

5. Publicaciones y Conferencias

58 publicaciones (2 monografías; 15 artículos científicos en revistas indexadas [Scopus - SJR, Latindex]; 4 artículos en revistas no indexadas; 21 capítulos de libro y 16 traducciones científicas).

11 conferencias como invitado (8 internacionales; 3 nacionales) 8 ponencias (seminarios internos de investigación).

6. Docencia Posgrado

Desde 2019: Máster en Derecho Penal Económico y Compliance Barcelona School of Management/Universidad Pompeu Fabra, Barcelona, España.

Desde 2019: Introducción al Derecho penal y penal económico español - Universität Bonn, Alemania.

Desde 2018: Magíster en Derecho Penal Universidad de Talca, Santiago de Chile, Chile.

Desde 2016: Posgrado de la Universidad Austral (Buenos Aires) - Curso de profundización en la teoría del delito a través de casos, Barcelona, España.

2016-2017: Magíster en Derecho Penal y Ciencias Penales - Universidad Nacional de Cuyo, Mendoza, Argentina.

Desde 2015: Máster en Derecho Penal - Universidad de Barcelona / Universidad Pompeu Fabra, Barcelona, España.

7. Dirección trabajos de grado, posgrado y tesis doctorales

(Co)dirección de 1: tesis doctoral en curso; 1 trabajo de máster finalizado; 3 trabajos de master en curso; 3 trabajos de grado finalizados.

8. Comités de Redacción

Revisor de manuscritos para 2 editoriales (Marcial Pons, Atelier) y 3 revistas (InDret, Política Criminal, EnLetra Penal).

Miembro del comité de redacción de 1 revista (InDret).



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Turno de acceso general

Nombre: KREDLER , MATTHIAS
Referencia: RYC2018-025230-I
Área Temática: Economía
Correo Electrónico: matthias.kredler@uc3m.es

Título:

family economics, labor markets, fiscal federations

Resumen de la Memoria:

My main line of research concerns the economics of the family, which I pursue mainly with my co-author Daniel Barczyk. In two published papers (RED, QE), we have shown how to extend the standard consumption-savings model to the case of altruistic agents who can give transfers to each other and who interact strategically. In a third published paper (REStud), we apply this theory to study the provision of informal care to elderly family members and conduct long-term-care policy analysis. In a related empirical paper (R&R Fiscal Studies), we document the cross-country variation in long-term-care arrangements across Europe and the U.S. Finally, a new paper (with Sean Fahle) shows that a unified theory of health risks, family interactions, and housing can explain several puzzles concerning old-age economic behavior.

In a second line of research, I study the effect of technological change on labor markets. In two single-authored published papers (JET, JEDC), I have analyzed models in which workers accumulate human capital that is technology-specific. I show that these theories can account for patterns we observe in wage and employment data across firms and industries. In another project on labor markets with Ana Millán and Ludo Visschers, we build on the Ph.D. thesis of my student Ana Millán to study how worker re-allocate over the business cycle between self-employment, paid employment, and unemployment.

In a third line of research, I study how strategic interactions between countries (or regions inside a federation) affect how countries can share risks using a central authority or using debt markets. A first paper with my student Rubén Veiga analyzes how regions and a central government interact strategically in their savings decisions and shows that bail-outs are unavoidable if the central government lacks commitment. In a second project, I study how default decisions play out when two countries interact strategically.

Resumen del Currículum Vitae:

CURRENT POSITION

Associate Professor (with tenure), Department of Economics, Universidad Carlos III de Madrid

EDUCATION

Ph.D. Economics, New York University, 2003-2008

ACADEMIC EXPERIENCE

- Assistant Professor, Department of Economics, Universidad Carlos III de Madrid (Sept. 2008 - May 2014)
- Visiting Assistant Professor, Department of Economics, University of Pennsylvania (Sept. 2011- June 2012)

PUBLICATIONS

- Evaluating Long-Term-Care Policy Options, Taking the Family Seriously (with Daniel Barczyk) *Review of Economic Studies*, 85(2), 2018: 766-809
- Altruistically-Motivated Transfers under Uncertainty (with Daniel Barczyk) *Quantitative Economics*, 5(3), 2014: 705-749
- A Dynamic Model of Altruistically-Motivated Transfers (with Daniel Barczyk) *Review of Economic Dynamics*, 17(2), 2014: 303-328
- Vintage Human Capital and Learning Curves *Journal of Economic Dynamics & Control*, 40, 2014: 154-178
- Experience vs. Obsolescence: A Vintage-Human-Capital Model *Journal of Economic Theory*, 150, 2014: 709-739

PROFESSIONAL SERVICE

- Co-Editor of *SERIES* (Journal of the Spanish Economic Association)
- Reviewer for Agencia Estatal de Investigación (Spain; former base de datos de expertos ANEP)
- Organization of job market at 43rd Simposio de la Asociación Española de Economía (Madrid)
- Member of the REDg workshop's program committee
- Member of program committee for 2013 Society for Economic Dynamics (SED) meetings



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Turno de acceso general

Nombre: LEHMKUHL BARBA, ORIOL
Referencia: RYC2018-025949-I
Área Temática: Energía y transporte
Correo Electrónico: orioldsi@gmail.com

Título:

High Fidelity of turbulent flows around bluff bodies

Resumen de la Memoria:

Dr. Oriol Lehmkuhl Barba holds a PhD in Mechanical Engineering (UPC, 2012). He is senior researcher at the BSC since 2016. His main research interests are related to turbulence, multi-phase and multi-physics modelling. He has been the co-director of 7 PhD theses (4 on-going), author of 50 papers in JCR journals, with more than 182 contributions to international conferences (h-index 17).

Main contributions of Dr. Lehmkuhl are not only in the numerical simulation of turbulent flows using DNS and LES techniques, but also the development of numerical tools and methodologies for the accurate simulation of turbulent flows and its extension to Multiphysics setups. These methods have been successfully tested and validated in different flows and are currently being used by me and co-workers in different HPC projects awarded by the Spanish Super Computing Network (RES), PRACE-Partnership for Advanced Computing in Europe and EU research projects, as well with R&D National and European projects. Additionally, Dr. Lehmkuhl is co-founder of Termo Fluids S.L. and CEO of the company until 2015. Termo Fluids S.L. (www.termofluids.com) is a spin-off of the Universitat Politècnica de Catalunya (UPC). Termo Fluids S.L., a private company, offers CFD and multi-physics analysis and optimization services at high performance computing (HPC) level. Termo Fluids is focused on the design and optimization of thermal systems, external aerodynamics, flow control, building ventilation and other industrial applications. Termo Fluids has participated directly or by means of its software in many R&D projects with the involvement of well known market leading companies such as Total, Alstom, RePower, Gas Natural, Abengoa, Fagor, Snecma, Liebherr or HP. Dr. Lehmkuhl did sell his shares of Termo Fluids S.L. in 2016, in order to join BSC looking to participate in the exascale challenge that the CFD community is facing in the upcoming decade.

Since 2016, I have been working at BSC as post-doctoral researcher leading the turbulence modelling research line in CASE. Being principal PI of one R&D competitive National Project focused on high fidelity methods for the simulation of aircrafts, PI of one R&D private contract with the company Vortex Bladeless S.L. to design an innovative wind turbine by means of advanced simulation technologies, PI of one R&D private contract with the company SEAT in order to introduce LES for the aerodynamic design of cars, PI of 3 research projects in the RES and participant of 6 more RES projects, PI of one Tier-0 PRACE project, participant of one DOE INCITE project in collaboration with Prof. P. Moin at Stanford University, participant of a CleanSky project FireExtinction as WP leader, coordinator of the CleanSky project ESTiMatE, PI of the H2020 HiFi-Turb and participant of the H2020 EXCELLERAT. In this period, I had published 16 JCR papers. In summary, I have been granted with a total 717097 euros as PI of competitive R&D projects and private contracts in BSC. Additionally, I am co-directing 4 PhD students at BSC in the topics of turbulence and multi-phase modelling.

Resumen del Currículum Vitae:

Dr. Oriol Lehmkuhl Barba holds a PhD in Mechanical Engineering (UPC, 2012). PDJ 2014 post-doc researcher by AGAUR (Generalitat de Catalunya) at UPC from 2015 to 2016. He is senior researcher at the Department of Computer Applications in Science and Engineering (CASE) of Barcelona Supercomputer Center (BSC) since 2016. His main research interests are related to turbulence modelling, multi-phase modelling, high-performance computing, multi-physics & multi-scale modelling, aerodynamic simulations and bio-mechanical modelling. He has been the co-director of 7 PhD theses (four of them on-going) and 2 master theses, is author of 50 papers in JCR journals (h-index 17), with 182 contributions to peer-reviewed international conferences and 4 patents. As a result of this research activity Dr. Lehmkuhl has built a strong research network including different Universities (i.e. Stanford University, University of Stuttgart, University of Southampton, Queen's University, etc.), research institutes (i.e. Center of Turbulence Research, Keldysh Institute of Applied Mathematics, etc.) and companies (i.e. Alstom Wind, Envision Energy, Total, Gas Natural, Scnema, Liebherr, Abengoa Solar, Fagor, HP, Seat, etc.). In addition, Dr. Lehmkuhl has been involved in 18 national and EU financially supported projects focused on the development of HPC CFD codes (FP6, FP7, H2020 and CleanSky) and has been participant of 25 High Performance Computing research projects of the Spanish Supercomputer Network (RES), 4 Tier-0 PRACE HPC projects and 1 INCITE project at Argonne.

Moreover, he is co-founder of Termo Fluids S.L. (www.termofluids.com) a startup of UPC and was CEO of the company until 2015. This company was created in 2006 with the main objective of providing engineering services to different industries using HPC platforms. In that sense, he was leading the software development of the TermoFluids CFD platform from 2006 to 2016. TermoFluids is currently being used by different entities in R&D activities where high-fidelity simulations are a must. At the moment of selling the company (2016), 10 employees were hired and several European and national projects were being contracted using Dr. Lehmkuhl core technology.

Since 2016, Dr. Lehmkuhl has been working at BSC as post-doctoral researcher leading the turbulence modelling research line in CASE. At this time, he is the main PI of one R&D competitive National Project focused on high fidelity methods for the simulation of aircrafts, he is



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participating in one INCITE project in collaboration with Prof. Moin at Stanford University, participating in two CleanSky2 projects (one of them as project coordinator), one H2020 RIA project as PI and two H2020 projects as team member. Moreover, he has been PI of a R&D private contract with the company Vortex Bladeless S.L. to design an innovative wind turbine by means of advanced simulation technologies, PI of two R&D private contract with the company SEAT to research in wheel hub geometry impact on the car aerodynamics, PI of 3 research projects in the RES and participated in 6 more RES projects and PI of a Tier-0 PRACE project. Dr. Lehmkuhl has been granted with a total 717097 euros as PI of competitive R&D projects and private contracts in BSC. During this period, Dr. Lehmkuhl has published 16 JCR papers. Additionally, he is co-directing 4 PhD students at BSC.



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Nombre: MARTINEZ ROVIRA, IMMACULADA
Referencia: RYC2018-024043-I
Área Temática: Producción industrial, ingeniería civil e ingenierías para la sociedad
Correo Electrónico: immamartinez@gmail.com

Título:

Development of novel radiotherapy technologies: spatially fractionated radiotherapy, charged particle therapy and use of nanoparticles as radio-sensitizers

Resumen de la Memoria:

Radiotherapy is one of the most frequently used methods for cancer treatment. Despite recent breakthroughs, the dose tolerances of healthy tissues continue being the main limitation in radiotherapy. Thus, finding novel approaches that allow increasing healthy tissue resistance or tumor radio-sensitivity is of utmost importance. Within this context, my research activities have been mainly focused on the development of non-conventional radiotherapy technologies (spatially fractionated radiotherapy and use of nanoparticles as a radio-sensitizers) in order to confront the challenges that we face in the fight against cancer.

I have 10 years of experience in spatially fractionated radiotherapy, a novel strategy that uses the spatial modulation of the dose (comb of thin beams) to increase healthy tissue resistance. This approach constitutes a rupture with conventional radiotherapy and challenge many of the current paradigms in radiotherapy. In my Ph.D. thesis (performed at the European Synchrotron Radiation Facility (ESRF) in France; certified by the Universitat Politècnica de Catalunya (UPC) in Spain), I successfully overcome the challenges related to the technical implementation and medical physics studies of synchrotron x-ray microbeam and minibeam radiation therapy (MRT and MBRT).

During my post-doctoral research periods at the Service Hospitalier Frédéric Joliot (French Alternative Energies and Atomic Energy Commission, CEA 1.5 years), at the Laboratoire d'Imagerie et Modélisation en Neurobiologie et Cancérologie (Centre National de la Recherche Scientifique, CNRS, France 2 years) and at the Ionizing Radiation Research Group of the Universitat Autònoma de Barcelona (2 years), I worked in another cutting-edge radiotherapy strategy: charged particle therapy. My research includes innovations in radiation delivery techniques, as well as in dosimetry and quality assurance. In particular, I used a multidisciplinary approach (Monte Carlo simulations, experimental dosimetry and radiobiological studies) to explore and assess the clinical potential of new radiotherapy methods that improve the therapeutic index of charged particle therapy. I was pioneer in the technical implementation of spatially fractionated radiotherapy using hadron beams (proton and carbon beams, as well heavier ions such as Ne) in clinical centers. I was also pioneer in developing new modalities of grid therapy using conventional radiotherapy equipment at hospitals.

My multidisciplinary research also includes radiobiological studies using synchrotron-based infrared microspectroscopy to get deeper insights into the underlying biochemical mechanisms involved in these innovative radiotherapy strategies, which are still a matter of controversy. Within this context, I initiated and federated an international collaboration (Spain, France, Jordan and UK) to understand the biochemical response of glioma cells induced by radiotherapy irradiations in conjunction with nanoparticles.

As a result of my research (H-index: 10), I have published 21 full papers in renowned journals and 1 book chapter. My research experience has been recognized internationally with the recently awarded Marie Skłodowska-Curie Individual Fellowship (at ALBA Synchrotron), my previous Beatriu de Pinós Fellowship, and the French L'Oréal-UNESCO Fellowship for Women in Science.

Resumen del Currículum Vitae:

I hold a Physics Degree (Licenciatura; UB) and a 2-year M.Sc. in Biomedical Engineering (UPC-UB); in both of them I was awarded with the Premio Extraordinario. From the beginning of my scientific career, I worked in multidisciplinary projects for the development of innovative radiotherapy technologies, including the technical implementation in clinics, the medical physics studies (experimental dosimetry and Monte Carlo simulations) and the subsequent radiobiological studies.

My pre-doctoral research experience was acquired at the European Synchrotron Radiation Facility (ESRF, France). I published 7 articles within my Ph.D. (4 as a first author); my first article (Phys. Med. Biol.) was selected as a Featured Article by IOP. In March 2012, I defended my Ph.D. entitled "Monte Carlo and experimental small-field dosimetry applied to spatially fractionated synchrotron radiotherapy techniques" with the Cum Laude and Premio Extraordinario distinctions (UPC). Additionally, I was awarded with the prize of the best doctoral thesis using synchrotron radiation from the Synchrotron User Association of Spain (AUSE).

Then, I was postdoctoral researcher at the French Alternative Energies and Atomic Energy Commission (SHFJ/CEA, France 1.5 years), at the French National Center For Scientific Research (IMNC/CNRS, France 2 years) and later, I joined the Universitat Autònoma de Barcelona (GRRU/UAB 2 years) through a Beatriu de Pinós grant (Marie Curie COFUND program). My work was related to the development of novel radiotherapy approaches to improve the therapeutic index of charged particle therapy (spatially fractionated radiotherapy, use of nanoparticles as radio-sensitizers).



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These international experiences in first-class research institutions (7 years outside Spain), along with the fruitful collaborations with researchers worldwide were extremely enriching and edifying, and contributed to enhance my independence qualities as a researcher. As a result of my research (H-index: 10), I have published 21 full papers in renowned journals and 1 book chapter (12 as a first author and 1 as a last author; 18 of them in Q1), and presented my work in many international conferences (27 oral contributions as a corresponding and presenting author; 5 invited talks; 1 European Commission expert mission; 2 IAEA expert missions). During my scientific career, I federated an international collaboration (France, Jordan and UK) for the study of the radio-sensitization effects of nanoparticles. I have also been a key contributor on several research projects founded by public organisms (INSERM, MINECO) and private entities (Varian), as well as PI of 2 projects through institutional competitive calls (CNRS and ALBA).

A clear proof of the quality of my research is the number of awards I have received, with special relevance to the French L'Oréal-UNESCO fellowship for "Women in Science", and the recently awarded Marie Curie Individual Fellowship (at ALBA Synchrotron). My expertise in the field is also recognized by the scientific community with my participation as a referee in the French National research Agency (ANR) 2017 generic call and in many renowned scientific journals, as well as in two Ph.D. thesis juries.

Finally, I supervised 1 Ph.D. student and 3 Master students, and I carried out several teaching and outreach initiatives as a key part of my research.



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Turno de acceso general

Nombre: BAUS MARQUEZ, CRISTINA
Referencia: RYC2018-026174-I
Área Temática: Psicología
Correo Electrónico: baus.cristina@gmail.com

Título:

Language processing: within and across languages, modalities and verbal contexts

Resumen de la Memoria:

Since the very beginning of my research career, I have been interested in the topic of language and how it is implemented in the brain during speech comprehension and production. I have been involved in several projects exploring different questions related to language comprehension and production in isolation and within the boundaries of individual brains. With that aim, I was involved in the recording and processing of behavioral performance and the brain signatures (MRI and EEG) associated to successful speech perception and production.

Right after obtaining my bachelor, I was involved in a research project exploring the influence of individual differences in the final attainment of L2 speech perception. During my PhD training period I was involved in two projects related to language production. On one hand, I explored lexical processing during sign language production by exploring whether some linguistic phenomena observed previously for speech production was present for the signed modality. On the other hand, my PhD dissertation tackled the effects of a second language immersion on linguistic and cognitive processing by exploring longitudinally the effects of learning a second language while studying abroad. After completing my PhD, I dedicated my first post-doctoral fellowship to explore the electrophysiological correlates associated to language production and how they are modulated by different factors.

In the recent years, I have developed a special interest in exploring language in the social context. That is, exploring the interplay between language comprehension and production and between brains. As a result, I have been involved in different studies exploring the cognitive and social mechanisms underlying verbal communication.

At present I am mainly involved in two research projects. One relates to better understand language processing in verbal interactions, taking a two-person neuroscience perspective (2PN). In particular, it will be explored 1) How interlocutors brains are synchronized in conversation?, 2) How interlocutors coordinate speech content and timing in conversation?, 3) Language interaction as a platform for word learning. The second project relates to sign language and bilingualism. This project aims at exploring how hearing learners acquire the properties of the sign language and how cross-language interactions between spoken and sign languages unfold from the early stages of sign language learning.

In sum, I have been involved in several research projects. I have worked on speech perception, sign language processing, speech production and the link between language and social cognition. This broad perspective requires to be acquainted with the literature from different fields, which has allowed me to acquire ample theoretical and experimental knowledge on several topics related to language processing. In addition, this has implied to acquire the appropriate methodological knowledge to independently conceive, construct, analyze and interpret the experiments I design.

Resumen del Currículum Vitae:

In 2003, I obtained my Bachelor degree in Psychology and I was awarded with one-year research position to work with Prof. Sebastián-Gallés in a project on the effects of early bilingualism in speech perception. In 2004, due to my interest in sign language research, I joined Prof. Carreiras team (Cognitive Neuroscience lab, University of la Laguna). There, in 2005 I obtained a 4-year pre-doctoral fellowship (FPI) to investigate sign language processing. In 2010, I obtained the PhD degree (University of la Laguna) with a thesis on the effects of L2 immersion on the linguistic and cognitive processing. In 2011, I was awarded with a 3-years post-doctoral fellowship from the Spanish Government (Juan de la Cierva fellowship) and I joined the Speech Production and Bilingualism group at the University Pompeu Fabra (head: Dr. Costa). There, I was leading different projects aiming to investigate the temporal dynamics of language production. In 2014, I obtained a 2-years Marie Curie contract to work at the Language group at the University Aix-Marseille (head: Dr. Alario). During this time, I have developed my own project on language processing during verbal communication. At the same time, I have learnt all the ethical and economical aspects related to the project management. In 2017, I started working with Dr. Costa at the University Pompeu Fabra in a project exploring verbal interactions with foreign accented interlocutors.

My scientific production includes 25 publications (13 as first and corresponding author) in international referred indexed journals and book chapters. 13 have been published in the category of Social Sciences, with most of the articles included in the first quartile Q1; 6 published in the category of Science. I have co-authored 5 book chapters (and one accepted for publication) and 1 one specialized article on bilingualism for a magazine. With an h-index of 10, my work has been cited 257 times (indexed by WOS). In the last years, my publication record has been very stable with 2 to 4 papers published every year since 2012. In addition, the results obtained from those studies have resulted in my participation through posters/oral communications in more than 20 conferences and I have been invited speaker in 5 occasions. I have participated in 5 research projects from different national agencies. All my pre-doctoral, post-doctoral and mobility stays have been funded by national or international agencies as a result of a competitive process. During my research career I have forged a solid research network with national and international researchers mainly from European research centers (Budapest, Cambridge,



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Marseille).

I have tutored 5 MA students who were interested in conducting their dissertation under my supervision. I have supervised one PhD student and I am currently supervising two PhD students. I have obtained research funding as PI to investigate the topic of bimodal bilingualism. Together with these research activities, I put effort in approaching research to the general audience, especially the youth.

In sum, during my research career I have acquired a solid theoretical background and different experimental skills and I have developed independent thinking and leadership qualities as well as the ability to transfer knowledge to new students.

All this validates me as a consolidated and outstanding researcher in the field of language and validates my prospects of an independent research career in the near future.